# RCA Victor SERVICE DATA

REVISED and ABRIDGED EDITION

## VOLUME II

## 1938 · 1942

RADIO RECEIVERS · PHONOGRAPHS · TELEVISION

RADIO CORPORATION OF AMERICA
RCA Victor Division Camden N. J., U. S. A.

# RCA-Victor Service Notes Volume II

## Radio Receivers—Phonographs—Television

This Volume covers Notes previously issued for the years

1938 to 1942 inclusive

RCA VICTOR DIVISION OF RADIO CORPORATION OF AMERICA, • CAMDEN, N. J., U. S. A.

# COMPLETE INDEX

TO

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*1923 to 1942 inclusive*

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***Note: Second production models may often be identified by the letter "A" following the model number on the cabinet label. Third production may likewise be identified with the letter "B".***

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| R-37-P | | | 292B |
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| 40X30 | RC-405C | | 243C |
| 40X31 | RC-405D | | 243C |
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| 40X-52 (2nd Prod.) | RC-453 | | 246C |
| 40X-55 (2nd Prod.) | RC-453 | | 246C |
| BT-40 | RC-408 | | 456C |
| CV-40 | Power Unit | | 458C |
| RE-40 | | | 282B |
| RE-40-P | | | 282B |
| U-40 | RC-498A | 698C | 384C |
| 41 | Radiola 41 (AR-782) | | 158A |
| 41 D.C. | Radiola 41 D.C. (AR-871) | | 161A |
| BK41 | RC-449 | | 458C |
| BT41 | RC-449 | | 458C |
| 42 | Radiola 42 | | 60A |
| BK-42 | RC-408C | | 460C |
| BT-42 | RC-408A | | 460C |
| CV-42 | Power Unit | | 404C |
| U-42 | RC-498B | 698C | 384C |
| R-43 | | | 163A |
| U-43 | RC-498E | 698C | 384C |
| 44 | Radiola 44 (AR-594) | | 164A |
| Q44 | RC-531 | | 462C |
| U-44 | RC-486B | 698C | 467C |
| 45E Series | RC-435A | | 475C |
| 45X | RC-459L | | 477C |
| 45X-1, -2 | RC-457, RC-457A | | 481C |
| 45X-3, -4 | RC-457E | | 481C |
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| 45X11, -12 | RC-459, RC-459D, RC-459T | | 477C |
| 45X13 | RC-459A, RC-459E | | 477C |
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| 45X111, 112 | RC-459J | | 486C |
| 45X113 | RC-459K | | 486C |
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| U-45 | RC-486C | 698C | 467C |
| 46 | Radiola 46 (AR-596) | | 164A |
| 46 D.C. | Radiola 46 D.C. 110-Volt (AR-597) | | 169A |
| 46X1 | RC-459B, RC-459F | | 491C |
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| 46X11 | RC-456 | | 494C |
| 46X12 | RC-456 | | 494C |
| 46X13 | RC-456A | | 494C |
| 46X21 | RC-461B | | 496C |
| 46X23 | RC-461A | | 496C |
| 46X24 | RC-461 | | 496C |
| U-46 | RC-501 | 698C, 810C | 498C |
| 47 | Radiola 47 (AR-1147) | | 171A |
| 48 | Radiola 48 | | 60A |
| 50 | Radiola 50 (AR-910) Console—Similar to Radiola 17. | | |
| Radiola B-50 | RC-1004H | | 399C |
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| 51 | Radiola 51 (AR-904) Console—Similar to Radiola 18. | | |
| 51 D.C. | Radiola 51 D.C. | | 74A |
| QU-51C | RC-568 | 698C | 511C |
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| AR-969 | Radiola 28 D.C. | | |
| AR-981 | Radiola 18 D.C. | | |
| AR-982 | Radiola 62 | | |
| AR-1050 | Victor 9-25 | | |
| AR-1055 | Victor 9-55 | | |
| AR-1058 | Victor 7-10 | | |
| AR-1059 | Victor 7-25 | | |
| AZ-1071 | Victor 10-51 | | |
| AZ-1073 | Victor 10-70 | | |
| AZ-1077 | Victor 12-15 | | |
| AP-1080 | "B" Eliminator | | 236A |
| UZ-1082 | Loudspeaker 105 | | |
| AR-1145 | Short Wave Receiver | | 237A |
| AR-1147 | Radiola 47 | | |
| AR-1168 | Radiola 67 | | |
| AR-1258 | Radiola 21 | | |
| AR-1265 | Radiola 22 | | |
| AR-1300 | | | 238A |
| AA-1400 | Detector Amplifier | | 238A |
| AA-1520 | Radio Frequency Amplifier | | 238A |
| MI-8122 | Power Unit | | 34C |
| 9606 | Beat Oscillator | | 623B |
| 9800 | Automatic Record Changer | | 434B |
| 9820 | Automatic Record Changer | | 435B |
| 9844 | Automatic Record Changer | | 698C |
| 41918 | Victrola Junior | | 572C |
| AC | Radiola | | 2A |
| AR | Radiola | | 1A |
| Balanced Amplifier | Radiola | | 4A |
| Ballast Tube Data | | | XIV |
| Crystal Pickups | Tabulation | | XII |
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| Phonograph Motors. | Induction Disc and Universal | | 248A |
| Phonograph Motors. | Tabulation | | XIII |
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| Regenoflex | Radiola | | 11A |
| RS | Radiola | | 2A |
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| Superheterodyne | Radiola | | 98A |
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| RC-320 | 8M1 |
| RC-320A | 8M2 |
| RC-321 | 8M3 |
| RC-321A | 8M4 |
| RC-323 | 95T, 95T1 |
| RC-325C | 5Q2 |
| RC-325D | 5Q2X |
| RC-331 | HF-8, HF-8A |
| RC-331A | HF-6 |
| RC-331B | U-134, U-134A |
| RC-331C | U-132 |
| RC-332 | 94X |
| RC-333 | 94BK, 94BT |
| RC-333A | 94BT6 |
| RC-333B | 94BT1, 94BK1 |
| RC-333C | 94BT61 |
| RC-335 | 911K |
| RC-335A | 98K |
| RC-335B | 99K |
| RC-335C | 11Q4, 11QK |
| RC-335D | U-126, U-128 |
| RC-335E | 11QU |
| RC-335F | 910KG |
| RC-335H | 99T |
| RC-335K | U-129 |
| RC-335KR | U-30 |
| RC-336 | 8QB, 8QBK |
| RC-337 | 8Q1 |
| RC-337A | 8Q4 |
| RC-337B | 10Q1 |
| RC-338 | 12Q4, 12QK |
| RC-338A | 12QU |
| RC-339 | HF-1 |
| RC-340 | 94X-1, 94X-2 |
| RC-341 | U-111 |
| RC-341C | U-112 |
| RC-345C | 95X-1 |
| RC-345D | 95X |
| RC-345E | 95XL |
| RC-345F | 95XLW |
| RC-345H | U-104 |
| RC-348 | 95T5 |
| RC-348A | 96T |
| RC-348C | 96E |
| RC-348D | 96T1 |
| RC-348E | U-115 |
| RC-348F | 95T5LW |
| RC-348H | U-123 (1 band) |
| RC-348J | U-121 |
| RC-348L | U-127E |
| RC-349 | 97X |
| RC-350 | 9X to 9X-4 |
| RC-350A | 9X-6, 9X-11 to 9X-14 |
| RC-351 | 96K, 96T2 |
| RC-351A | 97E, 97KG, 97T |
| RC-351B | 96K2, 96T3 |
| RC-351C | U-124 |
| RC-351D | U-122E |
| RC-351E | U-119 |
| RC-351F | 97K |
| RC-351K | 97K2, 97T2 |
| RC-351L | 96E2, 96K5, 96K6, 96T7 |
| RC-352 | 98EY, 98X, 98YG |
| RC-352A | 97Y |
| RC-352B | UY-122E |
| RC-352C | UY-124 |
| RC-352D | 98T2 |
| RC-354 | U-130 |
| RC-354A | HF-4 |
| RC-354B | HF-2 |
| RC-357 | 9M1 |
| RC-357A | 9M2 |
| RC-357J | M-50 |
| RC-357K | M-60 |
| RC-366 | 5Q4 |
| RC-381 | 95X-11 |
| RC-381A | 95X-6 |
| RC-386 | U-125 |
| RC-386A | 98K2, 98T |
| RC-386B | U-25, U-26 |
| RC-390 | 94BK2, 94BT2 |
| RC-392 | 96BK6, 96BT6 |
| RC-394 | M-70 |
| RC-396 | 5Q5, 5Q55, 5Q56 |
| RC-396B | 5Q8 |
| RC-396D | 5Q12 |
| RC-396E | 5Q12A |
| RC-399 | 96T4, 96T5 |
| RC-399A | 96T6 |
| RC-400 | 96X-1 to 96X-4 |
| RC-400A | 96X-11 to 96X-14 |
| RC-401 | 9TX-1 to 9TX-5 |
| RC-403 | 9TX-21, 9TX-22 |
| RC-403A | 9TX-23 |
| RC-404A | U-8 |
| RC-405 | 9TX-31 |
| RC-405A | 9TX-32 |
| RC-405B | 9TX-33 |
| RC-405C | 40X-30 |
| RC-405D | 40X-31 |
| RC-406 | 5X5-W |
| RC-406A | 5X5-1 |
| RC-407 | 94BP-1 Series (94BP-61, -62, -64, -66, -80, -81) |
| RC-407B | 94BP-1 (2nd Prod.) (94BP-61, -62, -64, -66) |
| RC-408 | BT-40 |
| RC-408A | BT-42 |
| RC-408C | BK-42 |
| RC-410 | 94BP4, -B, -C, -R |
| RC-414 | 6QU |
| RC-414A | 6Q7 |
| RC-414B | 6Q8, 6QK8 |
| RC-414C | U-50 |
| RC-415 | K-60 |
| RC-415A | K-80 |
| RC-415B | K-60 (Loop), K-62 |
| RC-415C | K-80 (Loop), K-81, K-82 |
| RC-415D | K-80 (Loop) |
| RC-416 | T-64, T-65 |
| RC-416A | T-80 |
| RC-418 | T-55, T-55-S, T-56 |
| RC-418A | K-50 |
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| RC-421 | U-123 (2 bands) |
| RC-425 | T-60 |
| RC-425A | U-12 |
| RC-425D | T-62 |
| RC-427 | TRK-12 |
| RC-427A | TRK-9 |
| RC-427F | TRK-120 |
| RC-427G | TRK-90 |
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| RC-435 | 9TX-50, 9TX-50M |
| RC-435A | 45E, 45E-M, 45E-W |
| RC-436 | 40X-50 to 40X-57 |
| RC-440 | 4QB |
| RC-440A | 4QB4 |
| RC-441 | 6Q1 |
| RC-441A | 6Q4 |
| RC-442 | 6Q4X |
| RC-443 | 8Q2 |
| RC-443B | 8QU5-C, 8QU5-M |
| RC-444 | 9Q1 |
| RC-444A | 9QK |
| RC-449 | BK-41, BT-41 |
| RC-453 | 40X-52, 40X-55 (2nd Prod.) |
| RC-454 | 9TX-50, 9TX-50M (2nd Prod.) |
| RC-455 | BP-55, -56, -85 |
| RC-456 | 46X-11, 46X-12 |
| RC-456A | 46X-13 |
| RC-457 | 45X-1, 45X-2 |
| RC-457A | 45X-1, 45X-2 (2nd Prod.) |
| RC-457D | 45X-5, 45X-6 |
| RC-457E | 45X-3, 45X-4 |
| RC-459 | 45X-11, 45X-12 |
| RC-459A | 45X-13 |
| RC-459B | 46X-1, 46X-2 |
| RC-459C | 46X-3 |
| RC-459D | 45X-11, 45X-12 (2nd Prod.) |
| RC-459E | 45X-13 (2nd Prod.) |
| RC-459F | 46X-1, 46X-2 (2nd Prod.) |
| RC-459H | 46X-3 (2nd Prod.) |
| RC-459J | 45X-111, 45X-112, Radiola 510 |
| RC-459K | 45X-113 |
| RC-459L | 45X |
| RC-459M | 45X-16, 45X-17 |
| RC-459T | 45X-11, 45X-12 (3rd Prod.) |
| RC-461 | 46X-24 |
| RC-461A | 46X-23 |
| RC-461B | 46X-21 |
| RC-462 | 15X |
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| RC-477B | 5Q8 (2nd Prod.) |
| RC-477C | 5Q66 |
| RC-478 | 9Q4 |
| RC-478A | 7Q4 |
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| RC-482B | U-9 |
| RC-482C | U-9 (2nd Prod.) |
| RC-486B | U-44 |
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| RC-490 | 96X-5 |
| RC-496 | 7QB, 7QBK |
| RC-497 | K-50 (2nd Prod.) |
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| RC-498A | U-40 |
| RC-498B | U-42 |
| RC-498E | U-43 |
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| RC-507J | Q26 |
| RC-507K | Q27 |
| RC-507L | QU52C |
| RC-507N | QU52M |
| RC-508 | Q24 |
| RC-509 | 16T4 |
| RC-509A | 16T3 |
| RC-509B | 16T2 |
| RC-509C | 16K |
| RC-509F | 16T4 (2nd Prod.) |
| RC-509H | 16T3 (2nd Prod.) |
| RC-509J | 16T2 (2nd Prod.) |
| RC-511 | 18T |
| RC-512 | 17K |
| RC-512A | 19K |
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| RC-513A | 111K |
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| RC-517 | V-100 |
| RC-517C | V-105 |
| RC-517F | Radiola R-560P |
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| RC-526 | 15BT |
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| RC-527D | 25BP |
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| RC-572A | V-140 |
| RC-573 | V-209 |
| RC-573A | V-210 |
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| RC-582 | V175 |
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| RC-1000A | 16X13 |
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| RC-1001 | 10X |
| RC-1001A | 11X1 |
| RC-1001B | 12X, 12X2 |
| RC-1001B | 10X (2nd Prod.) |
| RC-1001C | 12AX, 12AX2, 35X, Radiola 516, 517, 522 |
| RC-1001D | 14X, 14X2 |
| RC-1001E | 14AX, 14AX2, 34X, Radiola 526, 527 |
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| RC-1002A | 28X5 |
| RC-1003 | 1X, 1X2, 25X |
| RC-1003A | 1AX, 1AX2 |
| RC-1003B | Radiola 510 (2nd Prod.), 511 (2nd Prod.) |
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| RC-1004B | 25BK, 25BT3 |
| RC-1004D | Radiola B-52 |
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| RC-1004H | Radiola B-50 |
| RC-1011 | 15X (2nd Prod.), 36X (2nd Prod.) |
| RC-1013 | 6X2 |
| RC-1014 | 26X1 |
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| RC-1014B | 26X4 |
| RC-1020 | 25BP (2nd Prod.) |
| RC-1020B | Radiola P-5 (2nd Prod.) |
| RC-1022 | 34X (2nd Prod.) |
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| R-6 | J-75 | — | GC-13 |
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| R-75 (47) | J-87 | — | — |
| R-75 (2A5) | J-87-A | — | — |
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| R-90-P | K-106-P | — | — |
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| 110 | K-52 | — | — |
| 111 | K-53 | WR-35 | — |
| 112 | L-52 | WR-34 | — |
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| 125 | M-62 | WR-53 | — |
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| 214 | M-55 | — | — |
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| 221 | M-65 | — | — |
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| 223 | C-67 | — | — |
| 224 | M-67 | — | — |
| 225 | M-655 | — | — |
| 226 | M-66 | — | — |
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| 240 | K-85 | — | — |
| 241-B | B-86 | — | — |
| 242 | M-86 | — | — |
| 243 | M-85 | — | — |
| 260 | K-107 | — | — |
| 261 | K-105 | — | — |
| 262 | M-106 | — | — |
| 263 | M-107 | — | — |
| 280 | K-126 | — | — |
| 281 | M-125 | — | — |
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| 301 | M-49 | — | — |
| 310 | K-58 | — | — |
| 321 | M-68 | — | — |
| 322 | M-69 | WR-49 | — |
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| 331 | K-79 | — | — |
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| 380-HR | M-128-R | — | — |
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## Brand Models Without RCA Victor Equivalents

| | |
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| WR-8 | Westinghouse WR-6 Chassis with Clock in Columnaire Cabinet. |
| WR-8-R | Westinghouse WR-6-R Chassis modified for Vertical operation in Columnaire Cabinet. |
| K-82 | G. E. K-62 in Clock Cabinet. |
| J-88 | G. E. J-82 with Manual Motor Board. |
| H-91 | G. E. H-51 (Modified) in Clock Cabinet. |
| H-91-R | G. E. H-51-R (Modified) in Clock Cabinet. |
| J-109 | G. E. J-100 Chassis and Automatic Motor Board. |
| JZ-826 | G. E. JZ-822 in Console Cabinet. |
| JZ-828 | G. E. J-88 with Short-Wave Adaptor. |

**NOTE: RCA Victor Models Without Brand Equivalents are not Listed**

# RCA CRYSTAL PICKUP DATA

## CRYSTAL CARTRIDGE DRAWING CODE

"A" Top Needle Hole
"B" Viscoloid Damper
"C" Thick (5/16-in.) Mtg. Hole
"D" Thin (7/32-in.) Mtg. Hole
"E" Grounded Lug
"F" Small Weight
"G" Large Weight
"H" Large "Cut" Weight
"J" 5/8-in. Needle Screw
"K" 11/16-in. Needle Screw
"L" 13/16-in. Needle Screw
"M" 15/16-in. Needle Screw

FIG. 1

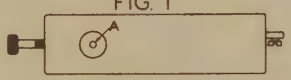



FIG. 2

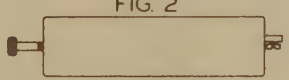



FIG. 3

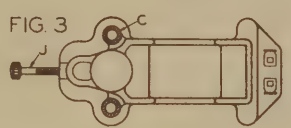



FIG. 4

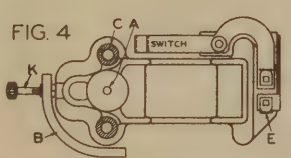



FIG. 5

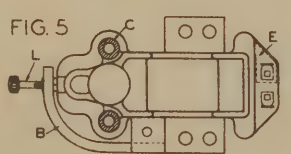



FIG. 6

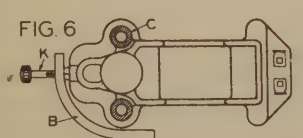
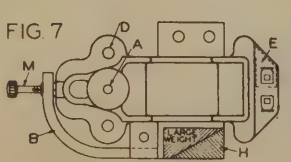



FIG. 7




| Model Number | Arm Stock Number | Arm Fig. No. | Crystal Cartridge Stock No. | Crystal Cartridge Fig. No. |
|---|---|---|---|---|
| QU2-C | 33906 | 3 | 33905 | 7 |
| QU3-C | 33906 | 3 | 33905 | 7 |
| *QU5 | 34011 | 2 | 33905 | 7 |
| 6QU | 33125 | 5 | 33122 | 5 |
| 8QU5-C | 34305 | 2 | 34307 | 9 |
| U-8 | 33121 | 5 | 33122 | 5 |
| U-9 | 33591 | 5 | 33122 | 5 |
| U-10 | 33591 | 5 | 33122 | 5 |
| *11-QU | 31159 | 1 | 31156 | 4 |
| *12-QU | 31159 | 1 | 31156 | 4 |
| U-12 | 33906 | 3 | 33905 | 7 |
| *VA-15 | 33906 | 3 | 35171 | 7 |
| U-20 | 33906 | 3 | 33905 | 7 |
| VA-20 | 9842 | 4 | 31050 | 3 |
| VA-21 | 33591 | 5 | 33122 | 5 |
| *VA-22 | 33096 | 3 | 31156 | 4 |
| | | | 33905** | 7 |
| *U-25 | 33096 | 3 | 31156 | 4 |
| *U-26 | 33096 | 3 | 31156 | 4 |
| *U-30 | 33096 | 3 | 31156 | 4 |
| *U-40 | 33906 | 3 | 35171 | 7 |
| *U-42 | 33906 | 3 | 35171 | 7 |
| *U-43 | 33906 | 3 | 35171 | 7 |
| *U-44 | 33906 | 3 | 35171 | 7 |
| *U-45 | 33906 | 3 | 35171 | 7 |
| *U-46 | 34011 | 2 | 33905 | 7 |
| O-50 | 33216 | 4 | 33217 | 6 |
| U-50 | 33216 | 4 | 33217 | 6 |
| R-60 | 33591 | 5 | 33122 | 5 |
| R-89 | 31887 | 4 | 31050 | 3 |
| R-91 | 9842 | 4 | 31050 | 3 |
| R-93-B | 9842 | 4 | 31050 | 3 |
| R-93-C | 9842 | 4 | 31050 | 3 |
| R 93-F | 33591 | 5 | 33122 | 5 |
| R-94-B | 31211 | 4 | 31050 | 3 |
| R-98 | 33399 | 1 | 31156 | 4 |
| R-100 | 33121 | 5 | 33122 | 5 |
| V-100 | 33591 | 5 | 33122 | 5 |
| V-101 | 33591 | 5 | 33122 | 5 |
| V-102 | 36768 | 3 | 33905 | 7 |
| R-103-S | 33591 | 5 | 33122 | 5 |
| U-104 | 32227 | 4 | 31050 | 3 |
| U-106 | 14818 | 6 | 14820 | 1 |
| U-107 | 14818 | 6 | 14820 | 1 |
| U-109 | 14818 | 6 | 14820 | 1 |
| U-111 | 9842 | 4 | 31050 | 3 |
| U-112 | 9842 | 4 | 31050 | 3 |
| U-115 | 32137 | 4 | 31050 | 3 |
| U-119 | 31468 | 1 | 31156 | 4 |
| U-121 | 32137 | 4 | 31050 | 3 |
| U-122E | 31468 | 1 | 31156 | 4 |
| UY-122E | 32016 | 1 | 31156 | 4 |
| *U-123 | 32884 | 1 | 31156 | 4 |
| U-124 | 31468 | 1 | 31156 | 4 |
| UY-124 | 32016 | 1 | 31156 | 4 |
| *U-125 | 31159 | 1 | 31156 | 4 |
| *U-126* | 31468 | 1 | 31156 | 4 |
| U-127E | 32137 | 4 | 31050 | 3 |
| *U-128 | 31159 | 1 | 31156 | 4 |
| *U-129 | 33096 | 1 | 31156 | 4 |
| *U-130 | 31159 | 1 | 31156 | 4 |
| *U-132 | 31159 | 1 | 32632 | 4 |
| *U-134 | 31159 | 1 | 32632 | 4 |
| *RP-139A | 33906 | 3 | 35171 | 7 |
| *RP-139C | 34776 | 1 | 34710 | 10 |
| *RP-145 | 33906 | 3 | 35171 | 7 |
| *RP-152 | 33906 | 3 | 35171 | 7 |
| *RP-152A | 36321 | 3 | 35171 | 7 |
| *RP-152B | 36322 | 2 | 37158 | 11 |
| *RP-152C | 36591 | 3 | 35171 | 7 |
| *RP-152D | 37181 | 2 | 33905 | 7 |
| *RP-152J | 36322 | 2 | 37158 | 11 |
| *RP-153 | 36513 | 2 | 33905 | 7 |
| *V-170 | 33906 | 3 | 35171 | 7 |
| *V-200 | 36321 | 3 | 35171 | 7 |
| *V-201 | 36321 | 3 | 35171 | 7 |
| *VHR-202 | 36322 | 2 | 33905 | 7 |
| *V-205 | 33906 | 3 | 37158 | 11 |
| *VHR-207 | 36322 | 2 | 33905 | 7 |
| *V-300 | 33906 | 3 | 37158 | 11 |
| *V-301 | 36513 | 2 | 33905 | 7 |
| *V-302 | 36513 | 2 | 33905 | 7 |
| *VHR-307 | 36322 | 2 | 33905 | 7 |
| *V-405 | 33906 | 3 | 37158 | 11 |
| *VHR-407 | 36322 | 2 | 33905 | 7 |
| | 33586 | 4 | 34225 | 8 |
| | 30707 | | 30708 | 2 |

*Automatic Record Changers.*
**Used on 25 cycle model only.

FIG. 8

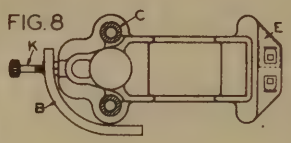



FIG. 9

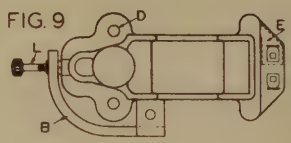



FIG. 10

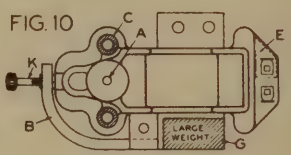



FIG. 11

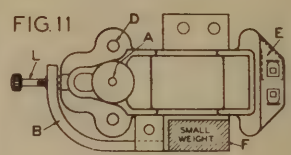



FIG. 1

FIG. 2

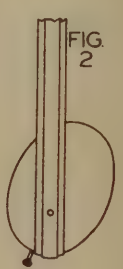


FIG. 3

FIG. 4

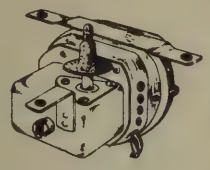
FIG. 5

FIG. 6

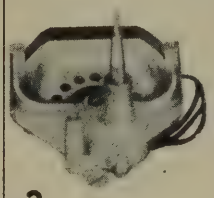
# RCA Victrola Motor Data

** CI—Capacitor—Induction—Self Starting
CS—Capacitor—Synchronous—Self Starting
I—Induction—Self Starting
S—Synchronous—Self Starting
SG—Series-Governor—Self Starting
SM—Synchronous—Manual Starting
IG—Induction—Governor—Self Starting

1



2



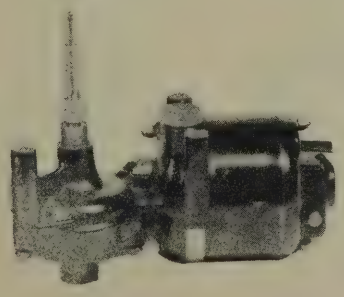
3

4

5

6

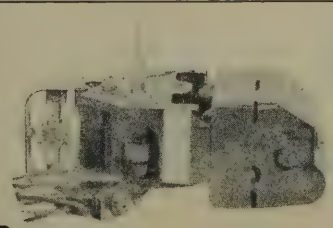
7



8

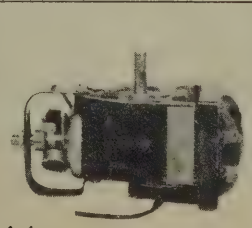
| Dwg. No. | Fig.* No. | ** Type | Used in RCA Model | Power Supply Voltage | Cycles | Watts | Stock No. |
|---|---|---|---|---|---|---|---|
| 72565-1 | 8 | CS | U-107, U-109, 9U, 9U2, 15U | 105-125 | 60 | 27.0 | 9650 |
| 72565-4 | 8 | CS | U-107, U-109, 9U, 9U2, 15U | " | 50 | 33.5 | 9651 |
| 72565-8 | 8 | CS | U-107, U-109, 9U, 9U2, 15U | " | 25 | 30.0 | 9735 |
| 72986-1 | 11 | IG | R-97, U-103, U-105, U-101 | " | 60 | 23.0 | 9799 |
| 84237-1 | 1 | SM | PRP-1, R93B-C, R-91 | " | 60 | 10 | 9841 |
| 72444-1 | 10 | IG | D8-28, D9-19 | " | 50<br>60 | 25<br>22 | 11701 |
| 72444-2 | 10 | IG | D8-28, D9-19 | " | 25 | 30 | 11702 |
| 72933-1 | 11 | IG | 7U2 | " | 60 | 23.0 | 13576 |
| 72444-3 | 10 | IG | 7U2 | " | 50<br>60 | 25<br>22 | 13577 |
| 72444-4 | 10 | IG | 7U2 | " | 25 | 30 | 13578 |
| 72933-3 | 11 | IG | R-94 | " | 60 | 23.0 | 14325 |
| 72933-4 | 11 | IG | R-94 | " | 50<br>60 | 25.5 | 14326 |
| 72933-5 | 11 | IG | R-94 | 210-250V | 50<br>60 | 25.5 | 14327 |
| 72986-2 | 11 | IG | R-97, U-103, U-105, U-101 | 105-125V | 50<br>60 | 25.5 | 14465 |
| 84008-1 | 11 | IG | R-97, U-103, U-105, U-101 | " | 25 | 24.0 | 14466 |
| 72933-6 | 11 | IG | R-96, U-102E, R-94B | " | 60 | 23.0 | 14800 |
| 81861-1 | 10 | IG | 88U | " | 50<br>60 | 25.5 | 14912 |
| 72933-7 | 11 | IG | U-102E, R-94B | " | 50<br>60 | 25.5 | 30475 |
| 84237-1 | 2 | SM | VA-21, R-93F, R-93B-C, R-91 | " | 50 | 10 | 31034 |
| 72986-3 | 11 | IG | U-125, U-126, U-128, U-130, U-132, U-25, U-26, U-30, U-129, U-134, U-46 | 105-125V | 60 | 23.0 | 31157 |
| 72986-4 | 11 | IG | " | " | 50<br>60 | 25.5 | 31163 |
| 84008-4 | 11 | IG | " | " | 25 | 24.0 | 31448 |
| 84323-1 | 11 | IG | R-98, U-119, U-124, U-122E | " | 60 | 23.0 | 31461 |
| 84323-2 | 11 | IG | R-98, U-119, U-124, U-122E | " | 50<br>60 | 25.5 | 31462 |
| 84388-1 | 11 | IG | U-119, U-124, U-122E | " | 25 | 24.0 | 31724 |
| 84333-1 | 10 | IG | 11QU, 12QU | " | 50<br>60 | 25.5 | 31876 |
| 84237-25 60 | 1 | SM | R-89 | 55-70V | 60 | 10 | 31923 |
| 84237-25 50 | 1 | SM | R-89 | " | 50 | 10 | 31924 |
| 84323-3 | 10 | IG | 8QU, 8QU1, 8QU2, M-81, M-82, M-83 | 105-125 | 50<br>60 | 25.5 | 31983 |
| 84415-1 | 9 | SG | UY-122E, UY-124 | " | 50<br>60<br>dc | 26<br>28.5<br>18.0 | 32006 |
| 84441-34 | 1 | SM | R-93F | " | 25 | 10 | 32077 |
| 84430-1 | 3 | I | U-115 | " | 60 | 19 | 32135 |
| 84484-2 | 2 | I | U-115 | " | 60 | 19 | 32558 |
| 84237-50 | 1 | SM | PRP-1 | " | 60 | 10 | 32469 |
| 84237-52 60 | 1 | SM | VA-21, VA-20 | 80-90V | 60 | 10 | 32508 |
| 84484-2 | 2 | I | U-121, U-127E | 105-125 | 60 | 19 | 32558 |
| 84484-3 | 2 | I | U-121, U-127E | " | 50 | 19 | 32637 |
| 84484-4 | 2 | I | U-121, U-127E | " | 25 | 19 | 32638 |
| 84237-52 50 | 1 | SM | VA-20 | 80-90V | 50 | 10 | 32643 |
| 84484-3 | 2 | I | U-115 | 105-125 | 50 | 19 | 32650 |
| 84484-4 | 2 | I | U-115 | " | 25 | 19 | 32652 |
| 84564-1 | 3 | I | VA-22, U-123, RP-139A | " | 60 | 21 | 32871 |
| 84564-2 | 3 | I | VA-22, U-123, RP-139A | 105-125 | 50 | 21 | 32872 |
| 84564-3 | 3 | I | VA-22, U-123, RP-139A | " | 25 | 22 | 32873 |
| 84569-7 | 2 | I | 6QU, 8QU5-C-M, U-50, O-50 | " | 60 | 19 | 33219 |
| 84569-8 | 2 | I | 6QU, 8QU5-C-M, O-50, U-50 | " | 50 | 19 | 33220 |
| 84632-1 | 1 | SM | R-100 | " | 60 | 10 | 33343 |
| 84599-1 | 1 | SM | U-8, R-100 | " | 50 | 10 | 33351 |
| 84599-2 | 1 | SM | U-8, R-100 | " | 25 | 12 | 33355 |
| 86852-1 | 4 | I | U-9, U-10, U-12 | " | 60 | 21 | 33902 |
| 84599-1 | 1 | SM | U-8, R-100 | " | 60 | 10 | 33940 |
| 84683-1 | 5 | I | R-60 | " | 60 | 23 | 34263 |
| 90767-1 | 6 | CI | QU-5, RP-145 | " | 60 | 14.5 | 34364 |
| 84754-1 | 6 | S | QU2-C-M, U-20 | " | 60 | 14 | 34412 |
| 86852-2 | 4 | I | U-9, U-10, U-12 | " | 50 | 23.5 | 34496 |
| 84754-2 | 6 | S | U-20 | 105-125 | 50 | 11 | 35604 |
| 90767-2 | 6 | CI | QU5 | " | 50 | 14.5 | 36114 |
| 91655-1 | 6 | CS | RP-152, RP-152A | " | 60 | 14.0 | 36254 |
| 91647-3 | 4 | I | V-100, V-102, V-101 | " | 60 | 21 | 36404 |
| 91655-2 | 6 | CS | RP-152 | " | 50 | 14.0 | 36725 |
| 91655-3 | 6 | CS | RP-152 | " | 25 | 14.0 | 36726 |
| 91779-1 | 7 | | VHR-202, VHR-207, VHR-407 | " | 60 | 35.5 | 36820 |
| 92127-1 | 6 | S | QU3-C-M | " | 60 | 14.0 | 36984 |
| 92127-2 | 6 | S | QU3-C-M | " | 50 | 14.0 | 36985 |
| 84976-1 | 12 | I | RP-153 | " | 60 | 24.0 | 37295 |
| 84976-3 | 12 | I | RP-153 | " | | 24.0 | 37296 |
| 91779-2 | 7 | | VHR-202, VHR-207, VHR-407 | " | 50 | 39.0 | 37941 |

*The illustrations show the general appearance of motors; details maybe different in various numbers for the same general type of motor.

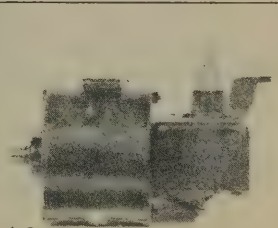


9

10



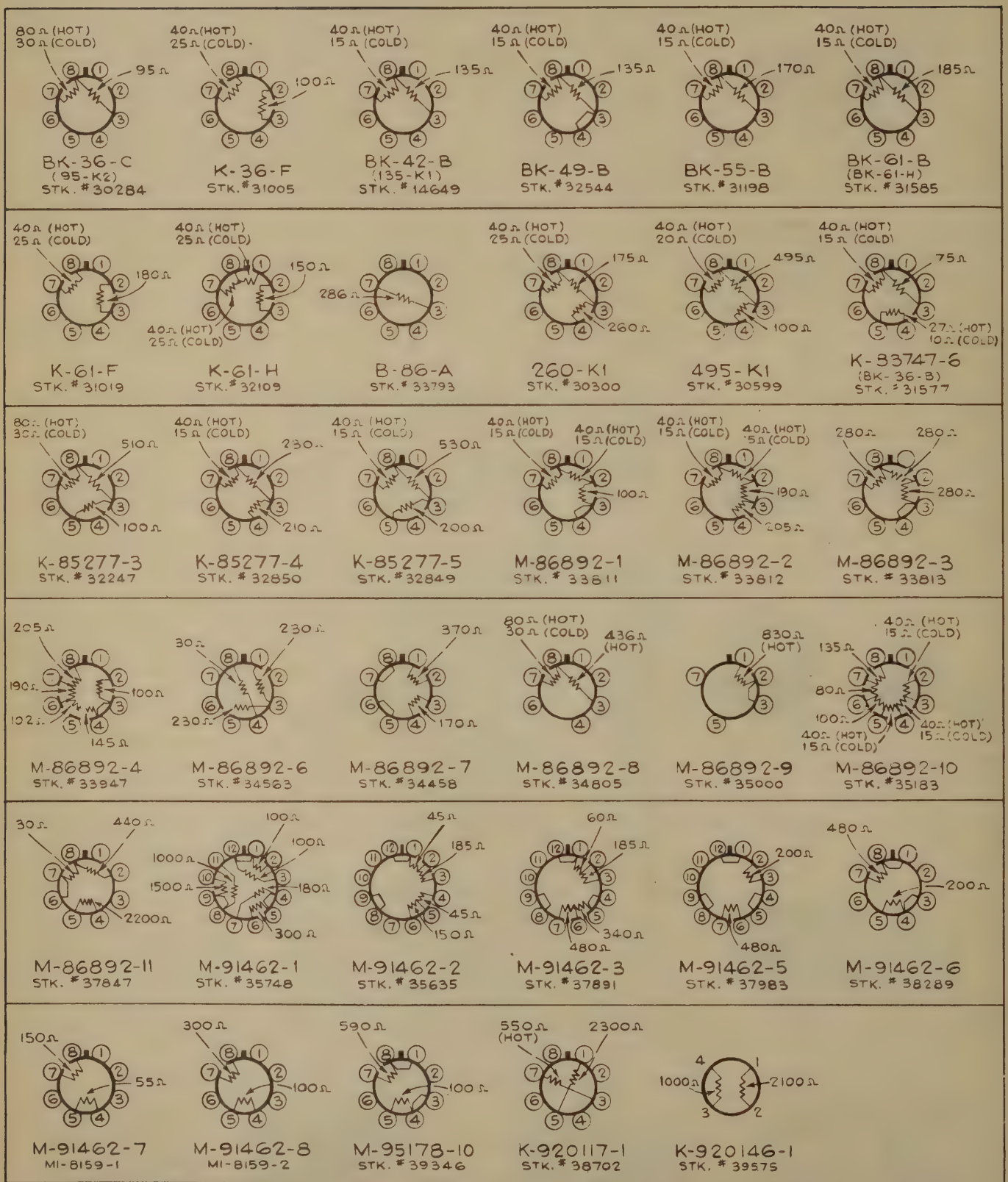
11



12

# RCA Resistor Ballast Tube Data

**(Nos. in parenthesis are original designations)**



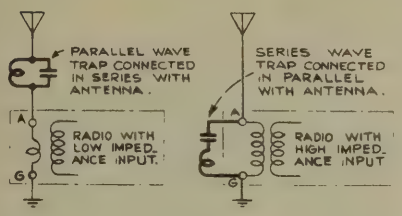
## RCA WAVE TRAP DATA

Complete electrical specifications for all available RCA wave traps are given below.

On sets with a **low-impedance input** (few turns on primary of antenna coil, with a d-c resistance usually less than 10 ohms) the trap should be connected in **series with the antenna.**

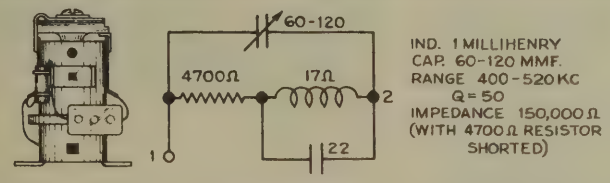
On sets with a **high-impedance input** (large number of turns on primary of antenna coil, with a d-c resistance of 10 ohms or more) the trap should be connected in **parallel with the antenna.**

Frequency ranges and "Q" are approximate.


PARALLEL WAVE TRAP CONNECTED IN SERIES WITH ANTENNA.
SERIES WAVE TRAP CONNECTED IN PARALLEL WITH ANTENNA.
A
G
RADIO WITH LOW IMPED. ANCE INPUT.
RADIO WITH HIGH IMPED. ANCE INPUT

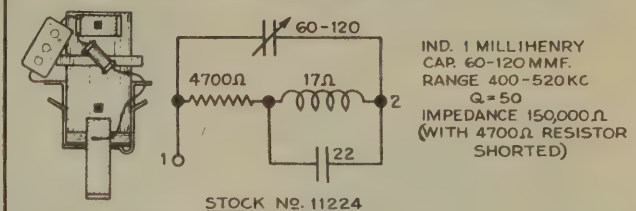
## FUSE DATA Tubular Glass Fuses:

| Stock No. | Rating (Amps.) | Type | Length (In.) | Diam. (In.) | Voltages Up To |
|---|---|---|---|---|---|
| 23563 | 0.1 | 3AG | 1¼ | ¼ | 250 V. |
| 3748 | 0.5 | 3AG | 1¼ | ¼ | 250 V. |
| 34527 | 0.75 | 3AG | 1¼ | ¼ | 250 V. |
| 14133 | 1.0 | 3AG | 1¼ | ¼ | 250 V. |
| 2725 | 1.5 | 3AG | 1¼ | ¼ | 250 V. |
| 3883 | 2.0 | 3AG | 1¼ | ¼ | 250 V. |
| 14582 | 2.0 | 8AG | 1 | ¼ | 250 V. |
| 10907 | 3.0 | 3AG | 1¼ | ¼ | 250 V. |
| 14158 | 3.0 | 1AG | ⅝ | ¼ | 250 V. |
| 37884 | 3.0 Time Delay | Little Fuse No. 1043 | 1¼ | ¼ | 250 V. |
| 5140 | 5.0 | 3AG | 1¼ | ¼ | 25 V. |
| 37883 | 5.0 Time Delay | Little Fuse No. 1358 | 1¼ | ¼ | 250 V. |
| 12958 | 6.0 | 3AG | 1¼ | ¼ | 25 V. |
| 28463 | 6.0 | 3AG | 1¼ | ¼ | 250 V. |
| 43518 | 6.0 | 5AG | 1¼ | 13/32 | 250 V. |
| 6148 | 10.0 | 3AG | 1¼ | ¼ | 25 V. |
| 5023 | 15.0 | 3AG | 1¼ | ¼ | 25 V. |
| 3646 | 20.0 | 3AG | 1¼ | ¼ | 25 V |



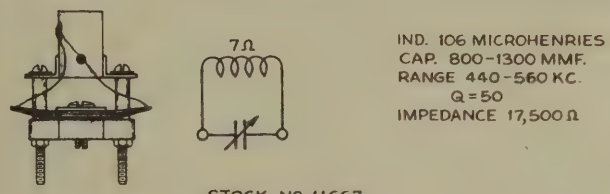

IND. 1 MILLIHENRY
CAP. 60-120 MMF.
RANGE 400-520 KC
Q = 50
IMPEDANCE 150,000 Ω
(WITH 4700 Ω RESISTOR SHORTED)

STOCK No. 11649



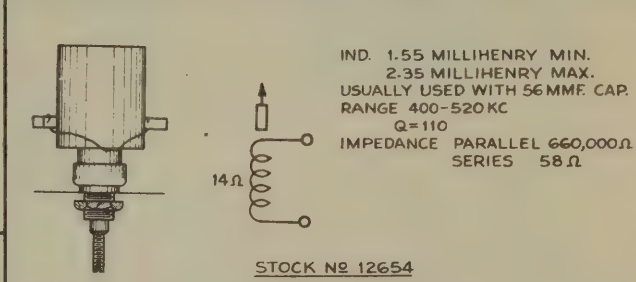

IND. 1 MILLIHENRY
CAP. 60-120 MMF.
RANGE 400-520 KC
Q = 50
IMPEDANCE 150,000 Ω
(WITH 4700 Ω RESISTOR SHORTED)

STOCK No. 11224



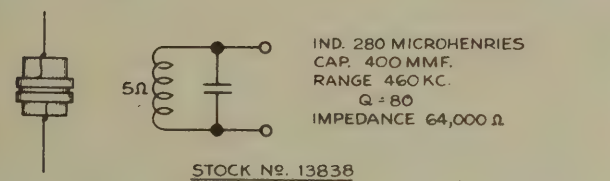

IND. 106 MICROHENRIES
CAP. 800-1300 MMF.
RANGE 440-560 KC.
Q = 50
IMPEDANCE 17,500 Ω

STOCK No. 11667



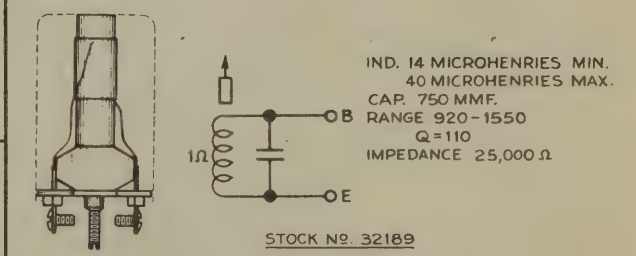

IND. 1.55 MILLIHENRY MIN.
2.35 MILLIHENRY MAX.
USUALLY USED WITH 56 MMF. CAP.
RANGE 400-520 KC
Q = 110
IMPEDANCE PARALLEL 660,000 Ω
SERIES 58 Ω

STOCK No. 12654



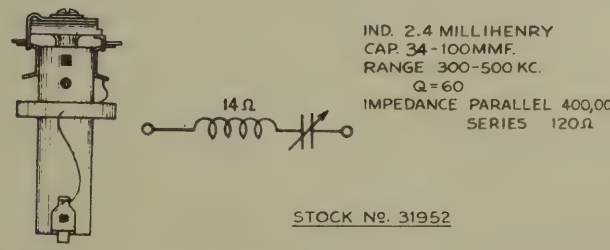

IND. 280 MICROHENRIES
CAP. 400 MMF.
RANGE 460 KC.
Q = 80
IMPEDANCE 64,000 Ω

STOCK No. 13838



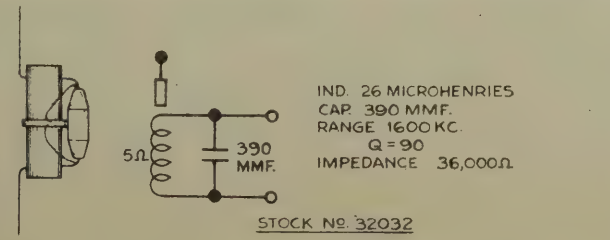

IND. 14 MICROHENRIES MIN.
40 MICROHENRIES MAX.
CAP. 750 MMF.
RANGE 920-1550
Q = 110
IMPEDANCE 25,000 Ω

STOCK No. 32189



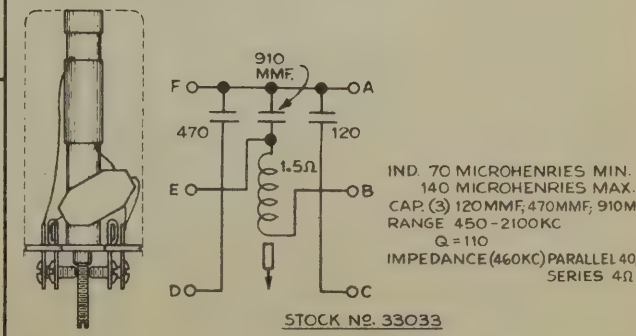

IND. 2.4 MILLIHENRY
CAP. 34-100 MMF.
RANGE 300-500 KC.
Q = 60
IMPEDANCE PARALLEL 400,000 Ω
SERIES 120 Ω

STOCK No. 31952




IND. 26 MICROHENRIES
CAP. 390 MMF.
RANGE 1600 KC.
Q = 90
IMPEDANCE 36,000 Ω

STOCK No. 32032




IND. 70 MICROHENRIES MIN.
140 MICROHENRIES MAX.
CAP. (3) 120 MMF, 470 MMF, 910 MMF.
RANGE 450-2100 KC
Q = 110
IMPEDANCE (460 KC) PARALLEL 40,000 Ω
SERIES 4 Ω

STOCK No. 33033

ILLUSTRATIONS ARE SLIGHTLY LESS THAN ½ SIZE

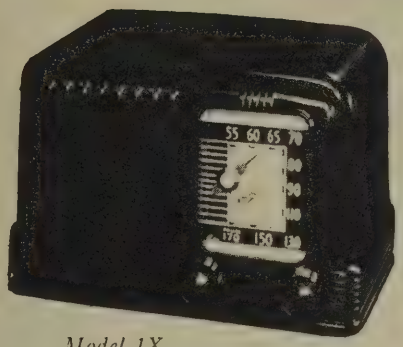
# RCA VICTOR Models 1AX, 1AX2, 1X, 1X2 and 25X

**Chassis No. RC-1003A** **RC-1003** **RC-1003**

# RADIOLA 510, 511, 510 (3RD PROD), 520

**2ND PROD. RC-1003B RC-1003D**

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver



*Model 1X*

*Model 1AX (Mahogany Plastic)*

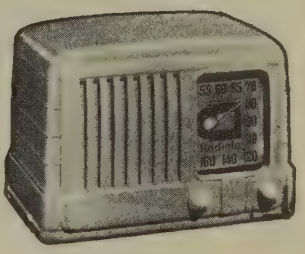
*Model 1X2*

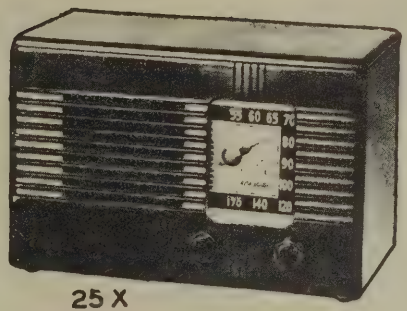
*Model 1AX2 (Antique Ivory)*

| Height | Width | Depth |
|---|---|---|
| 6⅝-in. | 9¾-in. | 5¼-in. |

*Radiola 510 (Mahogany Plastic)* →

*Radiola 511 (Antique Ivory)*





25 X

| Height | Width | Depth |
|---|---|---|
| 7½-in. | 11⅝-in. | 6 3/16-in. |

520

## Specifications

FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

POWER SUPPLY RATINGS
105-125 volts, direct current, or 50-60 cycles ..... 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)
Undistorted .....0.8 watts Maximum .....1.2 watts
LOUDSPEAKER (RL-81-B2) ..... 5 inch permanent magnet
OR ..... 5 inch electro-dynamic
*See Listing Below*

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil and turn the receiver volume control to maximum.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

**Test-Oscillator.**—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet point 1,600 kc end of dial | C8, C9 2nd I-F Transformer |
| 2 | 1st Det. grid in series with .01 mfd. | | | C6, C7 1st I-F Transformer |
| 3 | Ant. terminal in series with 100 mmfd. | 1,720 kc | Gang at minimum | C3 (osc.) |
| 4 | Radiated signal 1300 kc | | Signal Frequency | C1 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |

## SUBSTITUTE SPEAKERS

WHEN ORDERING REPLACEMENT PARTS FOR SPEAKERS, NOTE THE IDENTIFICATION NUMBER STAMPED ON THE SPEAKER FRAME. IF THE NUMBER STAMPED ON THE SPEAKER DOES NOT APPEAR IN THE FOLLOWING LIST, ORDER THE REQUIRED PART BY DESCRIPTION, AND SPECIFY THE IDENTIFYING NUMBER STAMPED ON THE SPEAKER AND THE RECEIVER MODEL NUMBER.

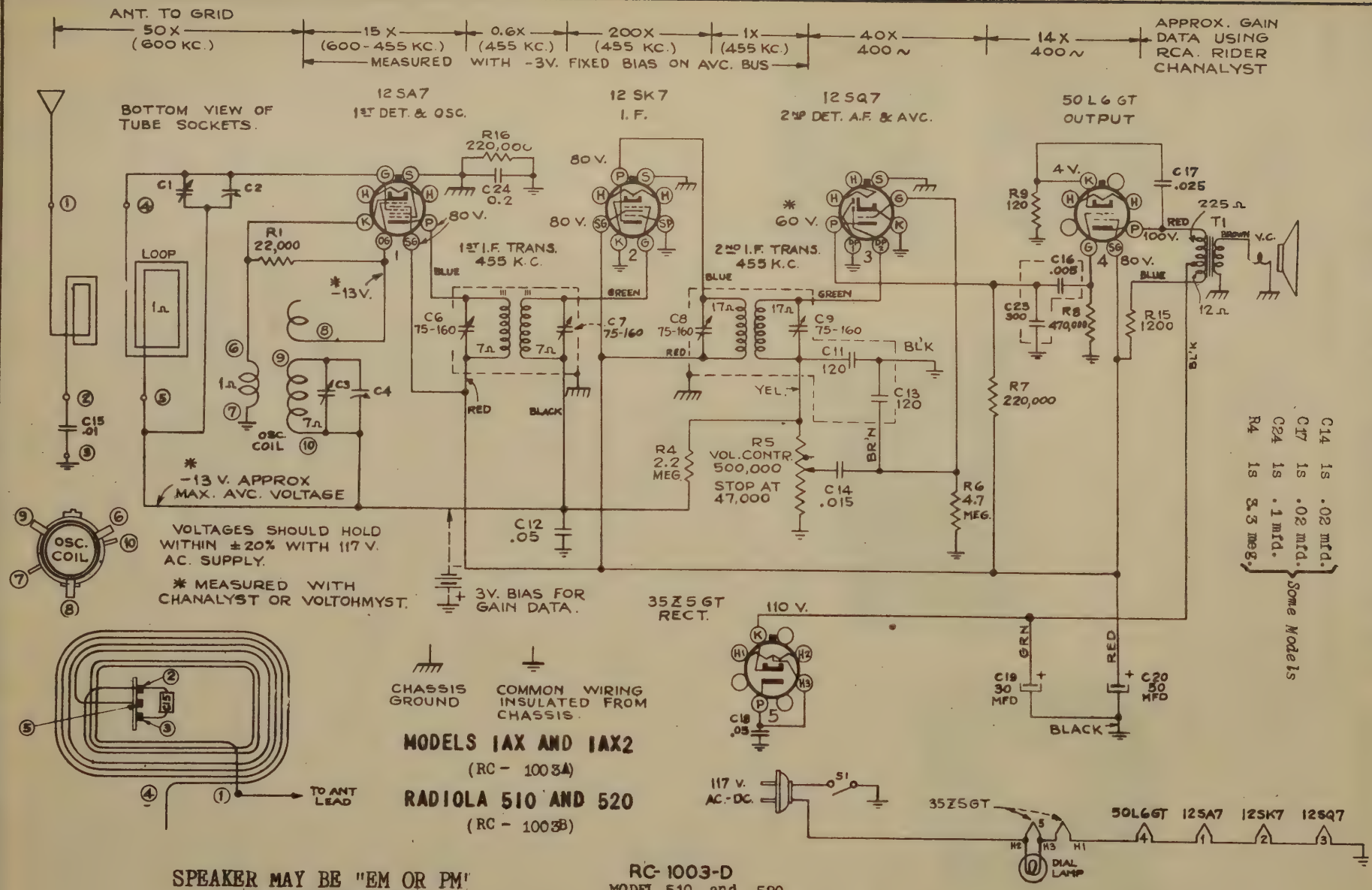
## SPEAKER LISTING

MODELS 1X, 1X2, 1AX, 1AX2
RL-81B2, RL-86A3, RL-86A1, RL-86B1, RL-86B4
MODELS 25X, 510 (RC-1003D), 520
RL-86B1, RL-86B4, 92379-1
MODELS 510 (RC-1003B), 511
RL-81B2, RL-86A3

NOTE: The following speakers may have been used as a substitute for the RL-81-B2 speaker in any model which originally called for the RL-81-B2:

| Speaker Stamping | Cone No. |
|---|---|
| 92161-3 | 38352 |
| 92161-4 | 39535 |
| 92161-5 | 38352 |
| 92322-2 | 39536 |
| 92374-1 | 39537 |

# 1X, 1X2, 1AX, 1AX2, 25X, 510, 511, 520




SPEAKER MAY BE "EM OR PM"
SEE NEXT PAGE FOR
"EM" SPEAKER CONNECTIONS

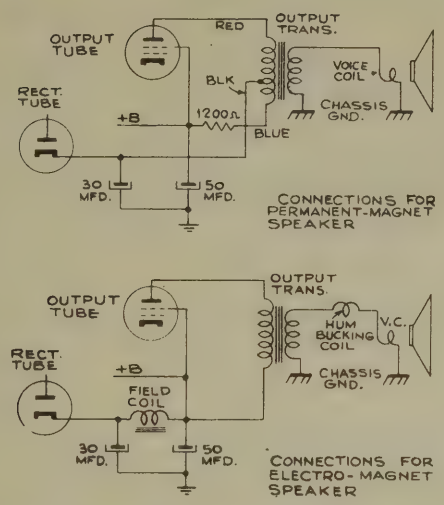
**RC-1003-D**
MODEL 510 and 520

C19 is 20 mfd.
C20 is 30 mfd.

**Line Bypass Capacitor:**

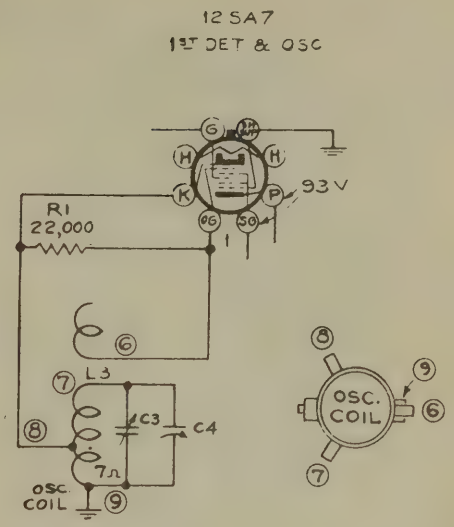
In some production, the .005 mfd. line bypass is connected from plate to cathode on the rectifier tube, instead of from plate to chassis.

## SUBSTITUTE SPEAKERS




**OUTPUT TUBE PLATE VOLTAGE USING "EM" SPEAKER: 87 VOLTS**

NOTE: RP-86A3 USES 450 OHM FIELD COIL, ALL OTHER EM SPEAKERS USE 350 OHM FIELD COIL.




**MODELS 1x, 1x2, 25x, 510 (3rd Prod.), 520**

**OSCILLATOR CIRCUIT**

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** Models 1AX and 1AX2 (RC-1003A) |
| 37359 | Capacitor—1 section of .005 mfd., and 1 section of 300 mmfd. |
| 11315 | Capacitor—.015 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 30 mfd. 150 volts, and 1 section of 50 mfd. 150 volts |
| 36801 | Coil—Oscillator coil |
| 37911 | Condenser—Variable tuning condenser |
| 35344 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 17-in. overall length) |
| 37913 | Dial—Dial scale |
| 37914 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 37915 | Loop—Antenna loop complete |
| 35993 | Plate—Dial plate—less dial scale |
| 30189 | Resistor—120 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 35343 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36232 | Transformer—First I.F. transformer |
| 37384 | Transformer—Second I.F. transformer |
| 37912 | Transformer—Output transformer |
| 34373 | Washer—"C" washer for tuning knob shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37916 | Back—Cabinet back (Model 1AX) Mahogany |
| 37917 | Back—Cabinet back (Model 1AX2) Ivory |
| 35079 | Crystal—Dial scale crystal—less dial |
| 33317 | Fastener—Push on fastener for cabinet back |
| 35080 | Fastener—Push on fastener for crystal |
| 35071 | Knob—Ivory control knob (Model 1AX2) |
| 30863 | Knob—Mahogany control knob (Model 1AX) |
| 30900 | Spring—Retaining spring for control knobs |

**2nd Production:**

The tuning-knob shaft and its "C" washer are changed as follows:

| | Shaft | "C" Washer |
|---|---|---|
| 1st Prod... | No. 35343 (1⅜-in.) | No. 34373 |
| 2nd Prod... | No. 38846 (1⅛-in.) | No. 33726 |

**Capacitor Changes:**

C14 changed from .015 to .02 mfd., No. 36248
C17 changed from .085 to .02 mfd., No. 36248
C24 (1AX, 1AX2) changed from .2 to .1 mfd., No. 43763
R4 changed from 2.2 to 3.3 megs., No. 12928

MODELS 1X AND 1X2
(RC - 1003)
REFER TO MODELS 1AX AND 1AX2

*Add Stock No.*

36234 Coil - Oscillator Coil

*Delete Stock No.*

36801 Coil and 34505 Capacitor

MODELS 510 AND 511
(RC - 10038)
REFER TO MODELS 1AX AND 1AX2

*Change the following Stock No's.*

| From | To | |
|---|---|---|
| 37913 | 37991 | Dial - Dial scale |
| 37014 | 36786 | Indicator - Station selector indicator. |
| 12264 | 14583 | Resistor - 220,000 ohms |
| 12679 | 30649 | Resistor - 2.2 meg. |
| 35971 | 36789 | Knob - Ivory control knob |
| 30863 | 34428 | Knob - Mahogany control knob |

Stock No. 30900 Spring not used with Models 510A and 511A

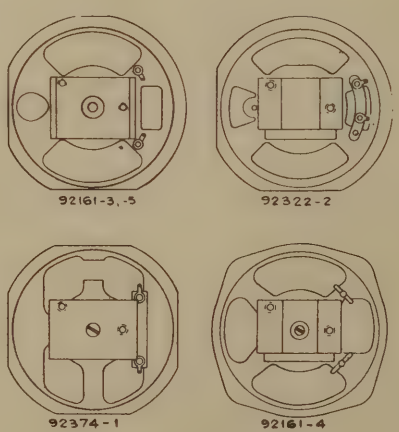
# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | MODEL 25X |
| | CHASSIS ASSEMBLIES (RC-1003) |
| 37359 | Capacitor—1 section of .005 mfd., and 1 section of 300 mmfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts |
| 36234 | Coil—Oscillator coil |
| 37911 | Condenser—Variable tuning condenser |
| 35344 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 17-in. overall lgth.) |
| 37913 | Dial—Dial scale |
| 37914 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 37915 | Loop—Antenna loop complete |
| 35993 | Plate—Dial plate—less dial scale |
| 30189 | Resistor—120 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 38846 | Shaft—Tuning knob shaft |
| 35345 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36232 | Transformer—First I.F. transformer |
| 37364 | Transformer—Second I.F. transformer |
| 35056 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | MISCELLANEOUS ASSEMBLIES |
| 39774 | Back—Cabinet back |
| 35079 | Crystal—Dial scale crystal |
| 33006 | Feet—Rubber feet—Pkg. of 4 |
| 30863 | Knob—Control knob |
| 30900 | Spring—Retaining spring for knob |
| | RADIOLA 510 AND 520 |
| | CHASSIS ASSEMBLIES (RC-1003-D) |
| 35097 | Can—Shield can for 1st I.F. transformer |
| 35332 | Can—Shield can for 2nd I.F. transformer |
| 35348 | Capacitor—Electrolytic comprising 1 section of 20 mfd., 150 volts, and 1 section of 30 mfd., 150 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of .0003 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 36234 | Coil—Oscillator coil |
| 37911 | Condenser—Variable tuning condenser |
| 35344 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 16½-in. overall length) |
| 37991 | Dial—Dial scale |
| 36786 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 37915 | Loop—Antenna loop |
| 35993 | Plate—Dial plate—less dial |
| 30189 | Resistor—120 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 38846 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—To hold I.F. transformers in shield cans |
| 36232 | Transformer—First I.F. transformer—less shield can |
| 37364 | Transformer—Second I.F. transformer—less shield can |
| 35056 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | MISCELLANEOUS ASSEMBLIES |
| 39778 | Back—Cabinet back (Radiola 520) |
| 37916 | Back—Cabinet back (Radiola 510, 3rd Prod.) |
| 35079 | Crystal—Dial scale crystal |
| 33317 | Fastener—Push fastener to hold back (Radiola 510, 3rd Prod.) |
| 35069 | Fastener—Push fastener to hold crystal (Radiola 510, 3rd Prod.) |
| 33006 | Feet—Rubber feet—Pkg. of 4 |
| 34428 | Knob—Control knob |

| STOCK No. | DESCRIPTION |
|---|---|
| | SPEAKER ASSEMBLIES (RL-81B2) |
| 35570 | Cone—Cone complete with voice coil |
| 37612 | Speaker—5-inch permanent magnet speaker complete with cone and voice coil—less output transformer |
| | (RL-86B-1) (RL-86B-4) |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil—350 ohms |
| 39447 | Cone—Cone complete with voice coil |
| | (92379-1) |
| 39995 | Coil—Field coil—350 ohms |
| 39994 | Cone—Cone complete with voice coil |
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required. |

| NUMBER STAMPED ON SPEAKER | CONE AND VOICE COIL STOCK No. | FIELD COIL STOCK No. | OUTPUT TRANS. STOCK NO. |
|---|---|---|---|
| RL-86-A3 | 35570 | 39543 | |
| RL-86-B1 | 39447 | 39448 | ALL "EM" SPEAKERS 35056 |
| RL-86-B4 | 39447 | 39448 | |
| 92161-3 | 38352 | PM | ALL "PM" SPEAKERS 37912 |
| 92161-4 | 39535 | PM | |
| 92161-5 | 38352 | PM | |
| 92322-2 | 39536 | PM | |
| 92374-1 | 39537 | PM | |




*Identifying Sketches of Five "PM" Speakers.*

# MODEL HF-1

## Eight-Tube, Single-Band, Electric-Tuning, A-C, Superheterodyne

### Electrical Specifications

Frequency Range..... 540-1,550 kc
2 Stations between approx. 540-1,160 kc (buttons 7 and 8)
3 Stations between approx. 630-1,230 kc (buttons 4, 5, and 6)
3 Stations between approx. 780-1,550 kc (buttons 1, 2, and 3)
Intermediate Frequency..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8..... First Detector—Oscillator
(2) RCA-6K7..... I-F Amplifier
(3) RCA-6R7..... Second Det., A-F Amp., and A.V.C.
(4) RCA-6J5..... Driver
(5) RCA-6J5..... Phase Inverter and Driver
(6) RCA-6F6..... Power Output
(7) RCA-6F6..... Power Output
(8) RCA-5T4..... Full-Wave Rectifier

A socket is provided for an RCA-6U5 or 6G5 "Magic Eye" Tuning Tube, to facilitate adjustments for electric tuning.

Pilot Lamp..... Mazda No. 46, 6.3 volts, 0.25 amps.

POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 115 watts
Rating B..... 105-125 volts, 25-60 cycles, 115 watts

POWER OUTPUT

Undistorted..... 10 watts
Maximum..... 12 watts

LOUDSPEAKER

Type..... 12-inch Electrodynamic
Impedance (v.c.)..... 2.25 ohms at 400 cycles

### I-F Alignment Procedure

**Cathode-ray Alignment** is the recommended method for Model HF1. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If an output meter is used, connect it across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment".

**Push in button 8, and adjust the No. 8 trimmers and core to a quiet point near 600 kc. Leave the button pushed in for the following operations:**

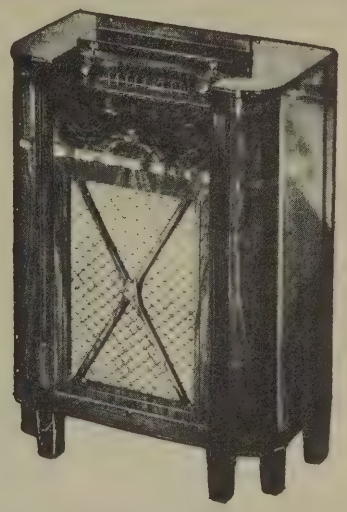
| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn Fidelity switch to— | Adjust the following for max. peak and symmetry— |
|---|---|---|---|---|
| No. 1 | 6K7 I-F grid cap, in series with .001 mfd. | 455 kc (20 kc sweep) | — — — — | L12 and L13 (3rd I-F transf.) (Refer to curve "A") |
| No. 2 | 6A8 1st-det. grid cap, in series with .001 mfd. | 455 kc (20 kc sweep) | Position 4 (from left) | Turn L4 and L5 (1st I-F) out as far as possible. Peak L8 and L9 (2nd I-F), and then L5 and L4. Readjust L8 and L9 slightly if necessary. (Refer to curve "B") |
| No. 3 | Turn selectivity switch to position 5. Response should be like curve "C". | | | |
| No. 4 | Turn selectivity switch to position 6 (full clockwise). Response should be like curve "D". | | | |
| No. 5 | Follow "Adjustments for Electric Tuning". | | | |

**Curve "A"** Input to I-F grid.

**Curve "B"** Input to 1st-det. grid, fidelity switch at position 4 (from left).

**Curve "C"** Input to 1st-det. grid, fidelity switch at position 5 (from left).

**Curve "D"** Input to 1st-det. grid, fidelity switch at position 6 (full clockwise).



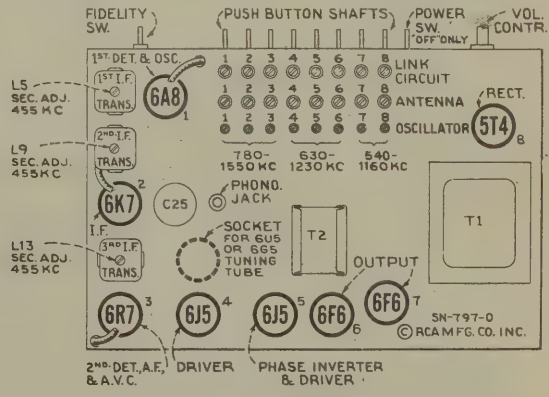
*Model HF-1*

### Adjustments for Electric Tuning

1. Make a list of the desired eight stations, arranged in order from high to low frequencies. It is preferable to select strong local high-quality stations within a radius of 100 miles.
2. Insert an RCA-6U5 or 6G5 Magic Eye tube in the six-prong socket on the chassis. Use an insulated screwdriver or alignment tool (such as RCA Stock No. 31031) for all adjustments. LEAVE THE FIDELITY SWITCH IN POSITION 3 OR 4 WHILE MAKING ADJUSTMENTS FOR ELECTRIC TUNING.
3. Remove the antenna lead-in from the "A" terminal and wrap it once around the green lead to the top cap of the 6A8 tube. (This provides capacity coupling between the antenna and the 6A8 grid.)
4. Push in button No. 1 and turn oscillator core No. 1 to bring in the first station on the list. Adjust the core carefully for peak output as indicated by the Magic Eye. Adjust link trimmer No. 1 for max. output.
5. Remove the antenna lead-in from the 6A8 grid lead and connect the lead-in to the "A" terminal. Adjust antenna trimmer No. 1 and link trimmer No. 1 for peak output as indicated by the Magic Eye.

**(Clockwise rotation of cores and trimmers tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies.)**

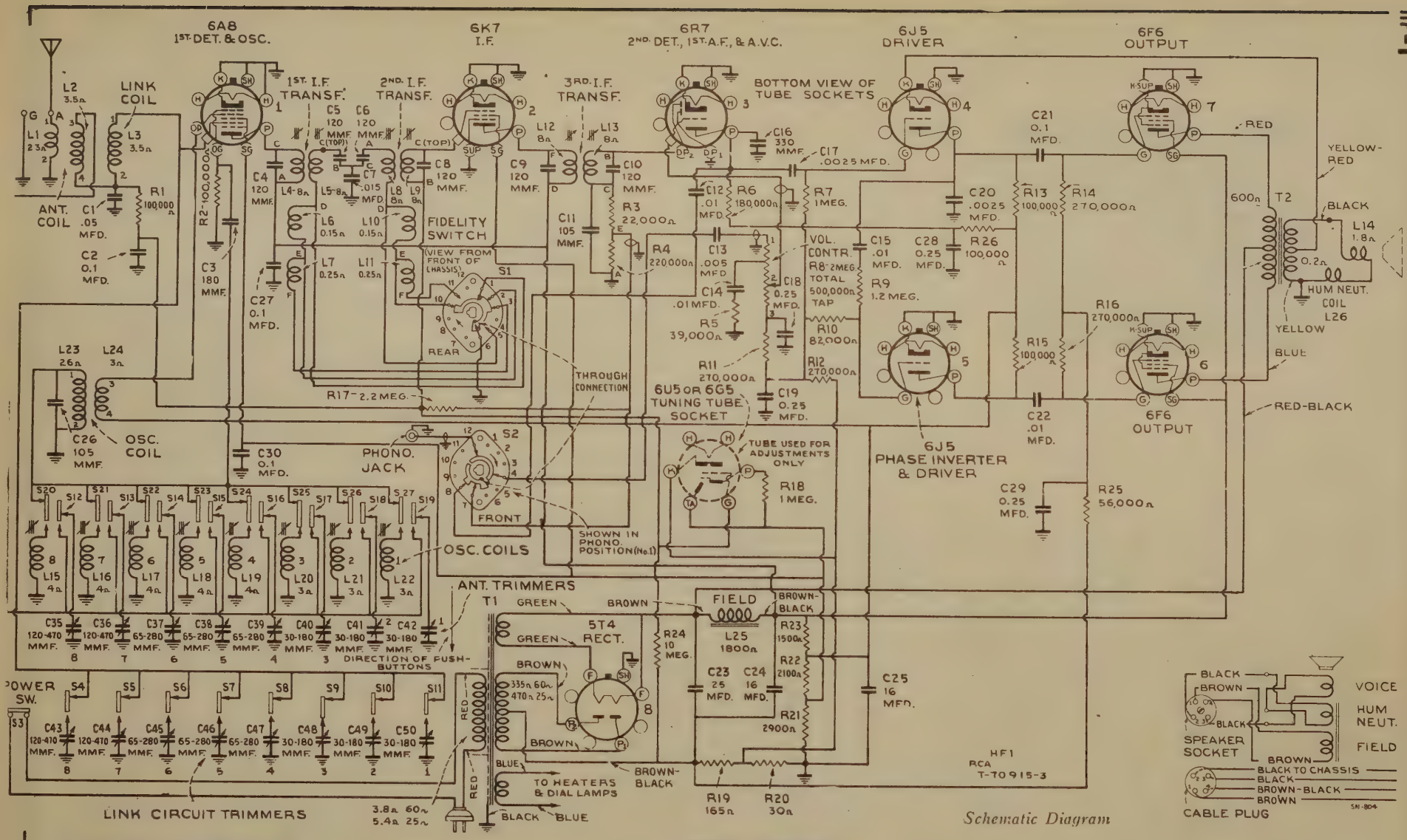
6. Push in button No. 2. Adjust oscillator core No. 2, antenna trimmer No. 2, and link trimmer No. 2 for the second station in the same manner.
7. Follow the same procedure for the remaining stations.




*Radiotron and Trimmer Locations*

#### Precautionary Lead Dress

1. The green lead from the antenna coil to the switch, and the green lead from the link coil to the switch, should be dressed away from the oscillator coils, and free of other leads, chassis, and parts.
2. When replacing a dual trimmer, it must be installed so that the top plate (to which the adjustment screws make contact) is the ground side. This is particularly important on C39-C40, and C47-C48, because the sections of these trimmers are of different capacity range and must be correctly oriented in the receiver. Grounding the top plate takes care of this.
3. Maintain color coding on output transformer (T2) as shown in the schematic diagram. This is necessary in order to obtain correct inverse-feedback action.




*Schematic Diagram*

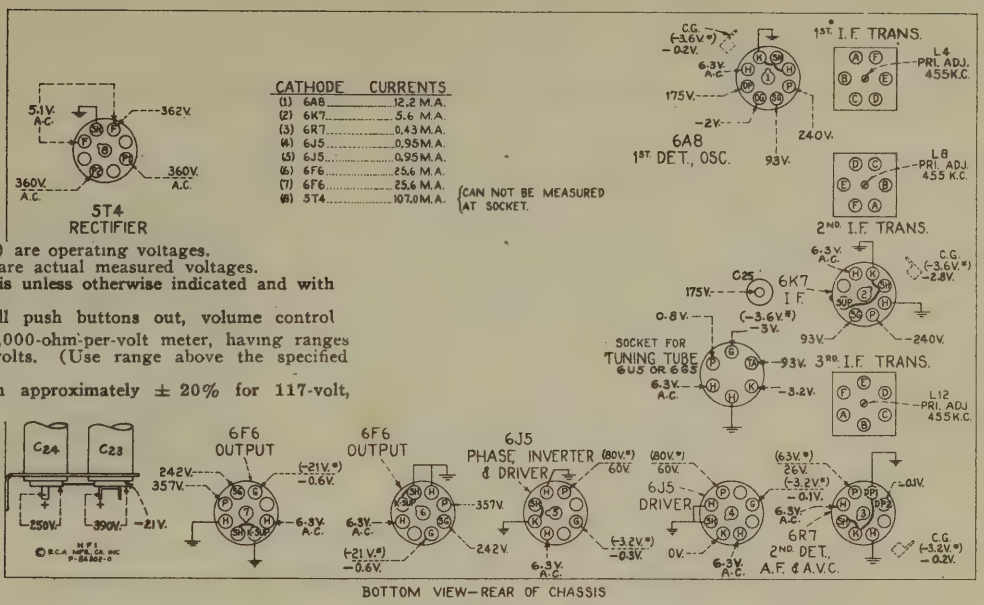
### Code Marking of Oscillator Coils:

Coils used in the oscillator circuit in conjunction with "push button" tuning are coded as follows for identification purposes:

| Stock No. | Range | Color Code or No. |
|---|---|---|
| 30747 | 770-1,550 kc | Red 1 |
| 30748 | 600-1,260 kc | Orange 2 |
| 30749 | 540-1,160 kc | Black 3 |

### Failure of Oscillator:

A few instruments contained a 33,000 ohm resistor in position R-2, serving as grid leak for the 6A8 oscillator section. It has been found that a 100,000 ohm, ½ watt resistor will give better performance over a greater range of tube characteristic and voltage variations. The 100,000 ohm resistor (Stock No. 14560) should be installed if required.




* Note: Values with star (*) are operating voltages.
Values not starred are actual measured voltages.
Measurements made to chassis unless otherwise indicated and with Magic Eye in socket.
Measurements made with all push buttons out, volume control turned to minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use range above the specified measured voltage.)
Values should hold within approximately ± 20% for 117-volt, 60-cycle supply.

*Radiotron Socket Voltages.*

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 13216 | Board—Antenna and ground terminal board |
| 30314 | Cap—Grid contact cap |
| 12581 | Cap—Shield cap for first or third I.F. transformers |
| 12607 | Cap—Shield cap for second I.F. transformers |
| 30750 | Capacitor—Adjustable dual trimmer 30-180 Mmfd. (C41, C42, C49, C50) |
| 31066 | Capacitor—Adjustable dual trimmer 30-180 Mmfd. and 65-280 Mmfd. (C39, C40, C47, C48) |
| 30764 | Capacitor—Adjustable dual trimmer 65-280 Mmfd. (C37, C38, C45, C46) |
| 30765 | Capacitor—Adjustable dual trimmer 120-470 Mmfd. (C35, C36, C43, C44) |
| 30769 | Capacitor—105 Mmfd. (C26) |
| 30904 | Capacitor—105 Mmfd. (C11) |
| 12404 | Capacitor—120 Mmfd. (C4, C5, C6, C8, C9, C10) |
| 13003 | Capacitor—180 Mmfd. (C3) |
| 12952 | Capacitor—330 Mmfd. (C16) |
| 5107 | Capacitor—.0025 Mfd. (C17, C20) |
| 4838 | Capacitor—.005 Mfd. (C13) |
| 14393 | Capacitor—.01 Mfd. (C12, C14, C15, C22) |
| 11315 | Capacitor—.015 Mfd. (C7) |
| 4886 | Capacitor—.05 Mfd. (C1) |
| 4839 | Capacitor—0.1 Mfd. (C2, C21, C27, C30) |
| 12484 | Capacitor—0.25 Mfd. (C18, C19, C28, C29) |
| 30105 | Capacitor—16 Mfd. (C25) |
| 5212 | Capacitor—16 Mfd. (C24) |
| 14531 | Capacitor—25 Mfd. (C23) |
| 31068 | Coil—Link coil (L3) |
| 31069 | Coil—Antenna coil (L1, L2) |
| 30749 | Coil—Oscillator coil (L15, L16) |
| 30748 | Coil—Oscillator coil (L17, L18, L19) |
| 30747 | Coil—Oscillator coil (L20, L21, L22) |
| 31067 | Coil—Oscillator coil (L23, L24) |
| 5040 | Connector—4-contact female speaker connector |
| 30846 | Core—Adjustable core and stud for oscillator coils |
| 12006 | Core—Adjustable core and stud for I.F. transformers |
| 5226 | Lamp—Pilot lamp |
| 30865 | Resistor—Voltage divider comprising one 1,500 ohm, one 2,100 ohm, one 2,900 ohm, two 15 ohm, and one 165 ohm sections (R19, R20, R21, R22, R23) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R3) |
| 12266 | Resistor—39,000 ohms, ½ watt (R5) |
| 12286 | Resistor—56,000 ohms, ½ watt (R25) |
| 12719 | Resistor—82,000 ohms, 1/10 watt (R10) |
| 14560 | Resistor—100,000 ohms, ½ watt (R1, R2, R13, R15, R26) |
| 13698 | Resistor—180,000 ohms, ½ watt (R6) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R4) |
| 12199 | Resistor—270,000 ohms, ½ watt (R11, R12, R14, R16) |

| STOCK No. | DESCRIPTION |
|---|---|
| 13730 | Resistor—1 meg., ½ watt (R18) |
| 12013 | Resistor—1 meg., 1/10 watt (R7) |
| 31056 | Resistor—1.2 meg., 1/10 watt (R9) |
| 12679 | Resistor—2.2 meg., ½ watt (R17) |
| 13601 | Resistor—10 meg., ½ watt (R24) |
| 12007 | Spring—Retaining spring for core Stock Nos. 12006 and 30846 |
| 12110 | Shield—Radiotron shield cap |
| 14278 | Socket—Phonograph socket |
| 14171 | Socket—Pilot lamp socket |
| 4786 | Socket—Adjustment eye socket |
| 11196 | Socket—Radiotron socket (8-contact) |
| 31061 | Switch—Selectivity and tone control switch (S1, S2) |
| 31070 | Switch—Station selector and on-off switch—less push buttons (S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15, S16, S17, S18, S19, S20, S21, S22, S23, S24, S25, S26, S27) |
| 31063 | Transformer—First I.F. transformer (L4, L5, L6, L7, C5, C4) |
| 31064 | Transformer—Second I.F. transformer (L8, L9, L10, L11, C6, C8) |
| 31065 | Transformer—Third I.F. transformer (L12, L13, C9, C10, C11, R3, R4) |
| 31062 | Transformer—Output transformer (T2) |
| 11211 | Transformer—Power transformer 105-120 volts, 50-60 cycle (T1) |
| 11212 | Transformer—Power transformer 105-120 volts, 25-60 cycle (T1) |
| 31060 | Volume Control (R8) |
| | **REPRODUCER ASSEMBLIES (Speaker RL70E-4)** |
| 13866 | Cap—Dust cap for cone center |
| 11234 | Coil—Field coil (L25) |
| 11469 | Coil—Neutralizing coil (L26) |
| 12667 | Cone—Reproducer cone, voice coil, center suspension, and dust cap (L14) |
| 5039 | Plug—4-contact male plug for reproducer |
| 31072 | Reproducer complete |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31074 | Button—Push button for on-off switch |
| 30981 | Button—Push button for station selector switch |
| 13103 | Cap—Pilot lamp cap |
| 31095 | Discs—10 celluloid protector discs for call-letter markers |
| 31073 | Escutcheon—Push button escutcheon |
| 14269 | Knob—Volume control or selectivity and tone switch knob |
| 31028 | Marker—Station call letter markers for push buttons |
| 31048 | Plug—2-contact male plug for phono jack |
| 14270 | Spring—Retaining spring for knob Stock No. 14269 |
| 32582 | Hinge—Cabinet lid hinge |
| 31434 | Switch—"On-off" power switch (S3) |

# MODELS QB1 and QB9

## Chassis No. RC-529-A RC-529-H

## Five-Tube, Five-Band, Battery-Operated, Superheterodyne Receiver

### MODEL QB 1 — Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.9-9.5 mc (103-31.5 m) |
| Short Wave | 9.5-11.8 mc (31.5-25.4 m) |
| Short Wave | 11.7-15.2 mc (25.6-19.7 m) |
| Short Wave | 15.05-23 mc (19.9-13 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

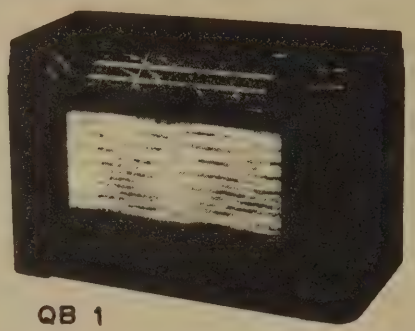
RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SA7 | 1st-Det.—Osc. |
| (2) RCA-6S7 | I-F Amplifier |
| (3) RCA-6T7-G | 2nd-Det., A.V.C., and 1st Audio |
| (4) RCA-6W7-G | Driver |
| (5) RCA-6Z7-G | Power Output |

| POWER OUTPUT | Battery Supply | A-C Supply |
|---|---|---|
| Undistorted | 3.1 watts | 3.0 watts |
| Maximum | 4.5 watts | 4.0 watts |

POWER SUPPLY RATINGS

With vibrator power supply unit (RS-115):
6.3 volts, total current drain ..... 3.2 amperes
With A-C power supply unit (CV-9X):
100-130/140-160/195-250 volts, 25-60 cycles ..... 38 watts



QB 1

LOUDSPEAKER (RL-92-5)

Type ..... 6-inch, permanent-magnet dynamic
Voice-coil Impedance at 400 cycles ..... 3.4 ohms

| CABINET DIMENSIONS | Height | Width | Depth |
|---|---|---|---|
| | 10⅜ in. | 15⅞ in. | 7⅜ in. |

Net Weight ..... 17 lbs.
Tuning Drive Ratio ..... 25:1

### MODEL QB 9 — Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.9-9.5 mc (103-31.5 m) |
| Short Wave | 9.5-11.8 mc (31.5-25.4 m) |
| Short Wave | 11.7-15.2 mc (25.6-19.7 m) |
| Short Wave | 15.1-22.5 mc (19.9-13.3 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SA7 | 1st-Det.—Osc |
| (2) RCA-6SS7 | I-F Amplifier |
| (3) RCA-6T7-G | 2nd-Det., A.V.C., and 1st Audio |
| (4) RCA-6W7-G | Driver |
| (5) RCA-6Y7-G | Power Output |

POWER OUTPUT

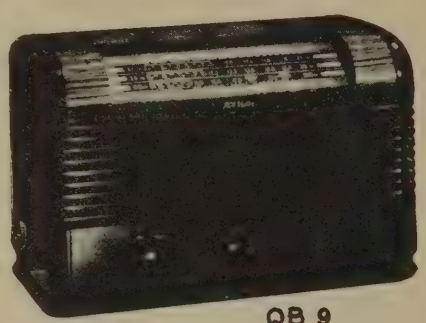
| | |
|---|---|
| Undistorted | 1.4 watts |
| Maximum | 2.1 watts |

POWER SUPPLY RATINGS

With vibrator power supply unit (RS-115B):
6.3 volts, total current drain ..... 2.7 amperes

LOUDSPEAKER (RL-79C3)

Type ..... 6-inch, electrodynamic
Voice-coil Impedance at 400 cycles ..... 3.4 ohms



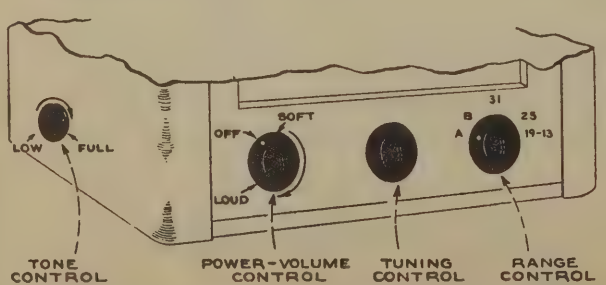
QB 9

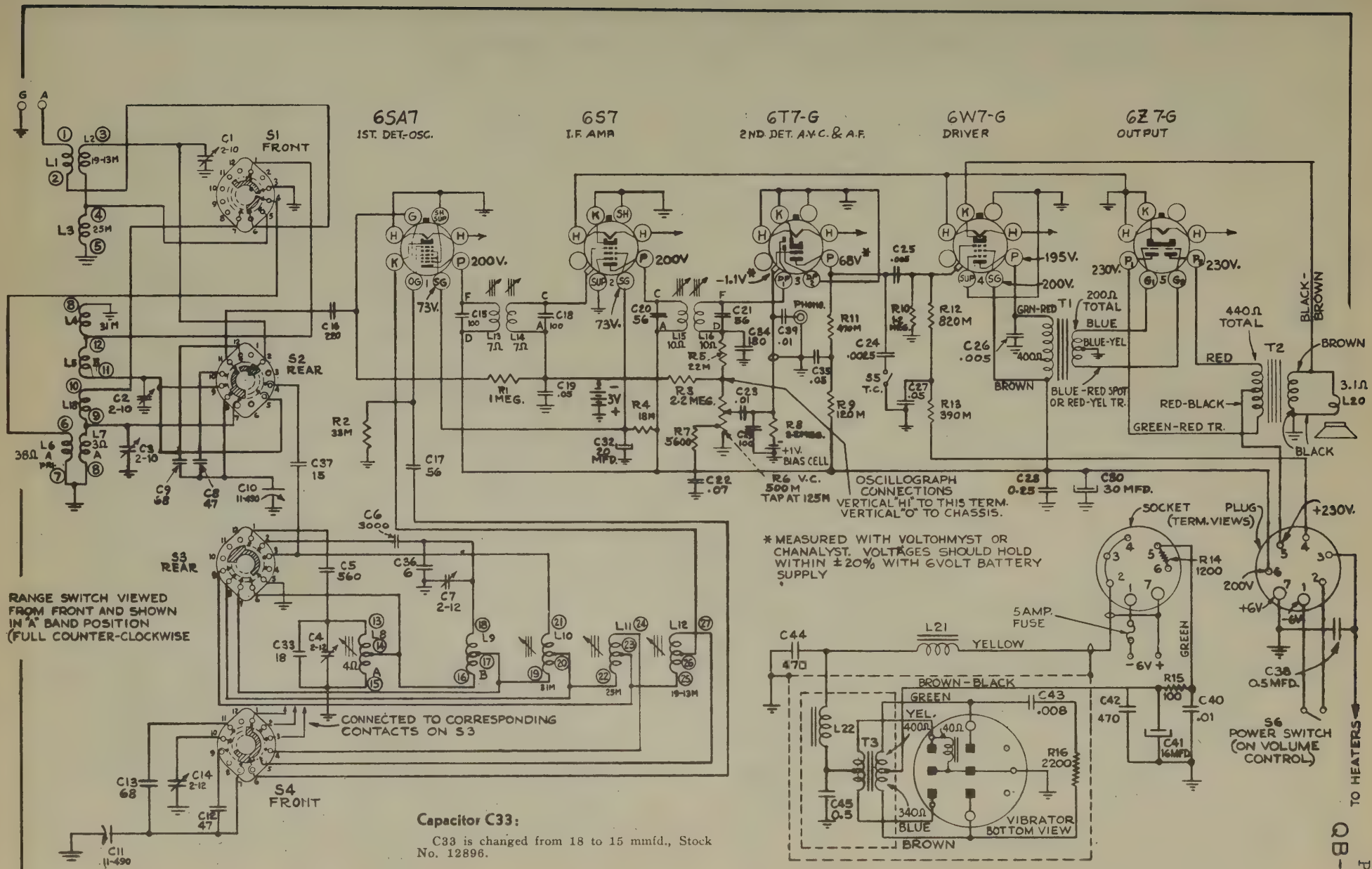
| CABINET DIMENSIONS | Height | Width | Depth |
|---|---|---|---|
| | 10⅜ in. | 17⅜ in. | 7⅞ in. |

Net Weight ..... 17 lbs.
Tuning Drive Ratio ..... 25:1

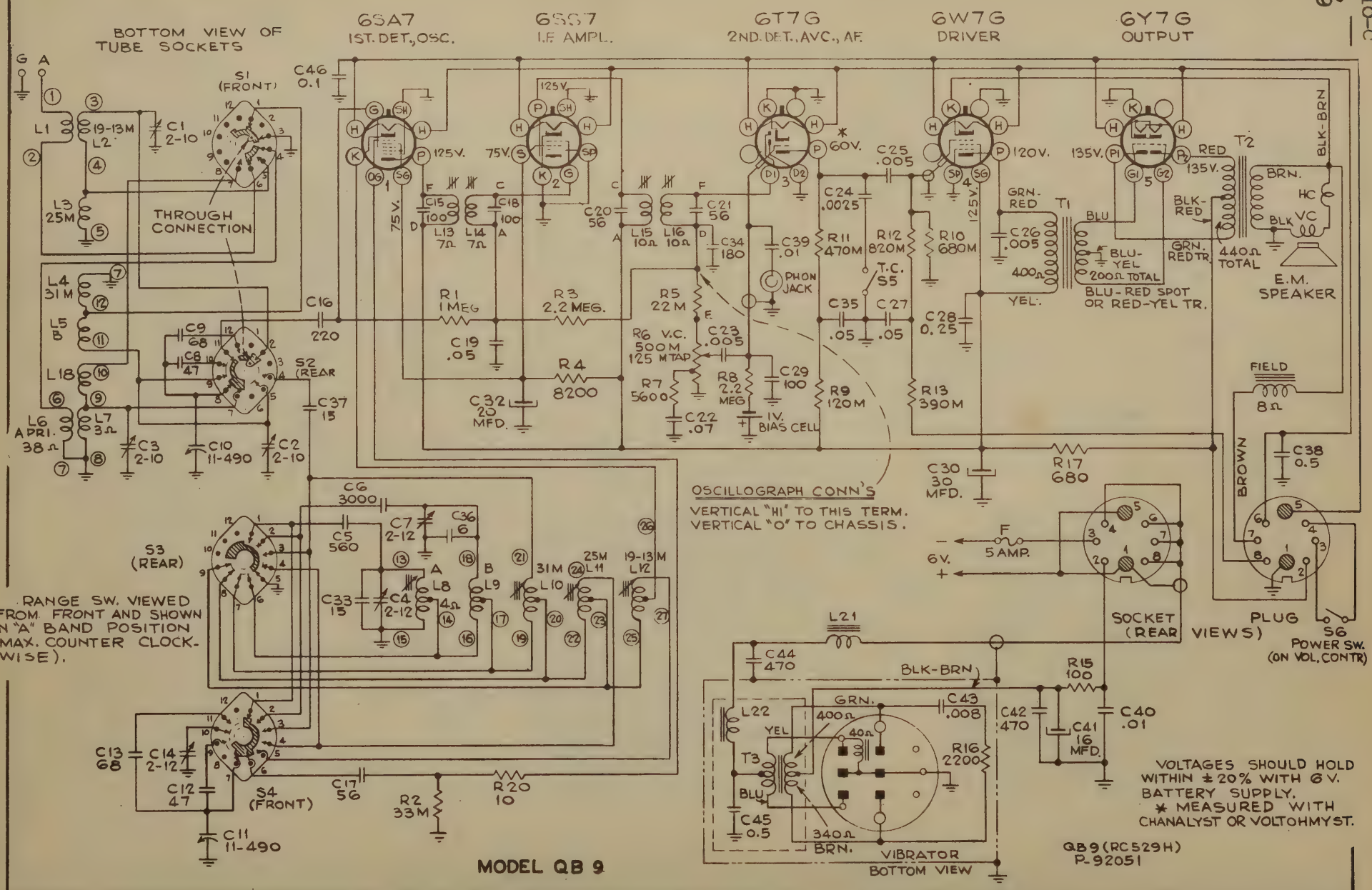
**Precautionary Lead Dress.—**

1. All oscillator coil leads must be kept apart from each other as well as other leads and parts. No two leads may be less than ⅜ inch apart.
2. Oscillator grid coupling condenser, C17, must bear tightly against switch or other condensers, and the green gang lead must bear against C17 from the other side. Cement with "amberoid."
3. C5 (560 mmf.) must be placed exactly midway between the two (19-13M and 25M) coils; it must be at least ⅜ inch away from any coil leads.
4. C12 (47 mmf.) condenser must be at least ¼ inch away from all parts and leads.
5. C13 (68 mmf.) condenser must bear against the switch and/or C17, grid coupling condenser and be cemented with "amberoid," or else clear all parts and leads by at least ¼ inch.
6. Antenna grid coupling condenser must be as far away from all metal parts as possible.
7. Braids between gang and chassis must be so soldered as to be as far away from stator lugs as possible.
8. Both condensers on the front switch lug No. 8 (with green antenna gang lead) must be as far away from metal shields of the switch and all other metal as possible.
9. AVC by-pass condenser (C19) must clear the tuning flywheel by at least ⅜ inch.
10. Make sure the bias cell polarity is correct.




6SA7
1ST. DET.-OSC.
6S7
I.F. AMP.
6T7-G
2ND. DET. A.V.C. & A.F.
6W7-G
DRIVER
6Z7-G
OUTPUT
S1 FRONT
S2 REAR
S3 REAR
S4 FRONT
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND POSITION (FULL COUNTER-CLOCKWISE
CONNECTED TO CORRESPONDING CONTACTS ON S3
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERM.
VERTICAL "O" TO CHASSIS.
* MEASURED WITH VOLTOHMYST OR CHANALYST. VOLTAGES SHOULD HOLD WITHIN ±20% WITH 6VOLT BATTERY SUPPLY
SOCKET (TERM. VIEWS)
PLUG
+230V.
200V
+6V
-6V
5 AMP. FUSE
YELLOW
GREEN
BROWN-BLACK
VIBRATOR BOTTOM VIEW
S6 POWER SWITCH (ON VOLUME CONTROL)
TO HEATERS
200Ω TOTAL
440Ω TOTAL
BLUE
BLUE-YEL
BLUE-RED SPOT OR RED-YEL TR.
RED
RED-BLACK
GREEN-RED TR.
BLACK-BROWN
BROWN
BLACK
GRN-RED
Capacitor C33:
C33 is changed from 18 to 15 mmfd., Stock No. 12896.

MODEL QB 1


BOTTOM VIEW OF TUBE SOCKETS
6SA7 IST. DET., OSC.
6SS7 I.F. AMPL.
6T7G 2ND. DET., AVC., AF
6W7G DRIVER
6Y7G OUTPUT
G A
S1 (FRONT)
L1
L2 19-13M
L3 25M
C1 2-10
THROUGH CONNECTION
L4 31M
L5 B
L18
L6 A PRI. 38Ω
L7 3Ω
C9 68
C8 47
S2 (REAR)
C3 2-10
C10 11-490
C2 2-10
C37 15
C46 0.1
C16 220
R1 1MEG
R3 2.2 MEG.
C19 .05
R4 8200
C32 20 MFD.
C15 100
C18 100
L13 7Ω
L14 7Ω
C20 56
L15 10Ω
L16 10Ω
C21 56
C34 180
R5 22M
R6 V.C. 500M 125 M TAP
R7 5600
R8 2.2 MEG
C22 .07
C23 .005
C29 100
1V. BIAS CELL
C39 .01
PHON JACK
C24 .0025
R11 470M
R12 820M
T.C. S5
C35 .05
C27 .05
R9 120M
C25 .005
R10 680M
R13 390M
C28 0.25
C30 30 MFD.
R17 680
T1
C26 .005
400Ω
YEL.
GRN. RED
BLU
BLU-YEL 200Ω TOTAL
BLU-RED SPOT OR RED-YEL TR.
T2
BLK-RED
GRN. RED TR.
440Ω TOTAL
RED
BLK-BRN
BRN.
HC
VC
BLK
E.M. SPEAKER
FIELD
8Ω
BROWN
C38 0.5
OSCILLOGRAPH CONN'S
VERTICAL "HI" TO THIS TERM.
VERTICAL "O" TO CHASSIS.
F 5 AMP.
6V. + −
SOCKET (REAR VIEWS)
PLUG
S6 POWER SW. (ON VOL. CONTR)
S3 (REAR)
C6 3000
C5 560
C7 2-12
C36 6
C33 15
C4 2-12
L8 4Ω
L9
L10 31M
L11 25M
L12 19-13M
RANGE SW. VIEWED FROM FRONT AND SHOWN IN "A" BAND POSITION (MAX. COUNTER CLOCK-WISE).
C13 68
C14 2-12
C12 47
C11 11-490
S4 (FRONT)
C17 56
R2 33M
R20 10
L21
C44 470
BLK-BRN
R15 100
L22
GRN.
400Ω
YEL
40Ω
T3
BLU
340Ω
BRN.
C43 .008
C42 470
C41 16 MFD.
C40 .01
R16 2200
C45 0.5
VIBRATOR BOTTOM VIEW
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 6 V. BATTERY SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
MODEL QB 9
QB9 (RC529H) P-92051

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of the test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

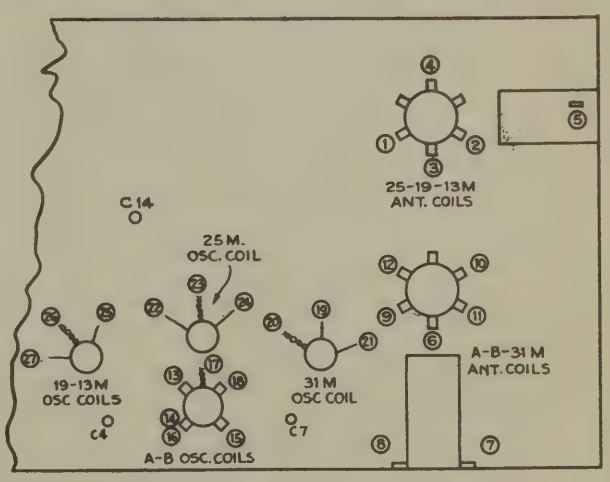
**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

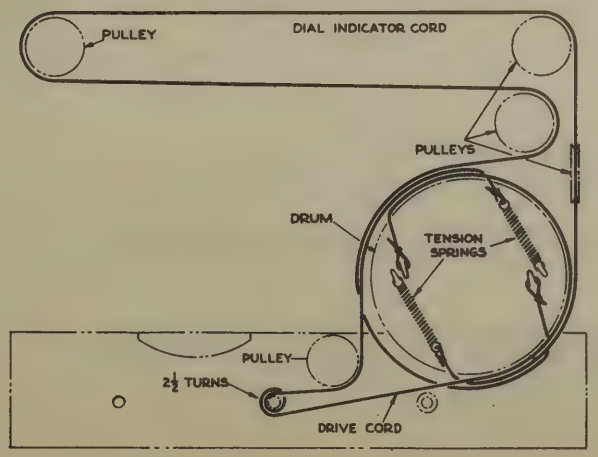
For additional information, refer to booklet "RCA Victor Receiver Alignment."

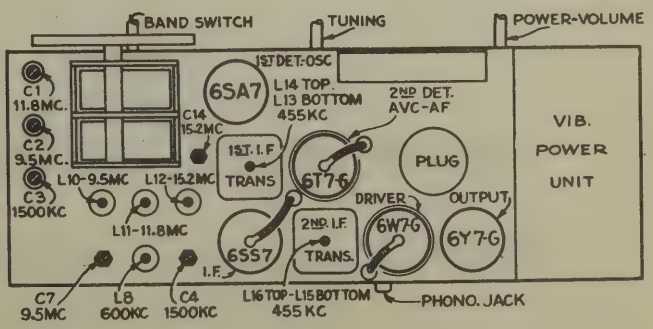
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| | On oscillator-circuit cores and trimmers, if two peaks can be obtained, use the one of minimum inductance or minimum capacity. | | | | |
| 1 | 1st I-F grid cap, in series with .01 mfd. | 455 kc | A | Quiet point near 180° | L15 and L16 2nd I-F transformer |
| 2 | 1st Det. grid, in series with .01 mfd. | | | | L13 and L14 1st I-F transformer |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L11 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C14 (osc.)* |
| 5 | | Repeat steps 3 and 4. | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L12 (osc.) |
| 7 | | 9.5 mc | 31M | 156° | L10 (osc.) C2 (ant.) |
| 8 | | 9.5 mc | B | 11.5° | C7 (osc.) |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C4 (osc.) C3 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | Repeat steps 9 and 10. | | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C14 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

**NOTE:** Oscillator tracks above signal on all bands.



# MODEL QB 1

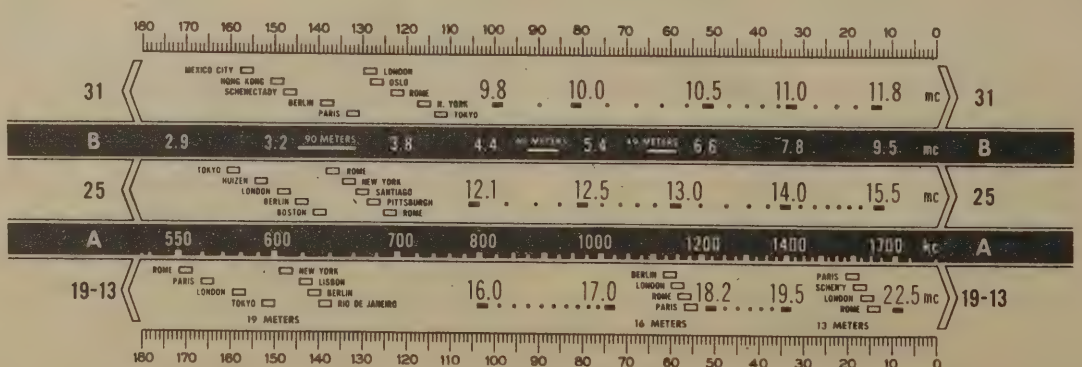
## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-529A)** |
| 35642 | Calibrator—Drive drum calibrator |
| 12714 | Capacitor—Air trimmer, medium |
| 34654 | Capacitor—Mica trimmer comprising 3 sections of 2.5-10 mmfd. |
| 35646 | Capacitor—6 mmfd. |
| 36012 | Capacitor—15 mmfd. |
| 31350 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 37329 | Capacitor—47 mmfd., silvered mica |
| 30949 | Capacitor—56 mmfd., mica |
| 12723 | Capacitor—56 mmfd., moulded mica |
| 35645 | Capacitor—68 mmfd., ceramic |
| 13057 | Capacitor—68 mmfd., silvered mica |
| 30904 | Capacitor—100 mmfd., mica |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 31433 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 4838 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. (C19, C27) |
| 4886 | Capacitor—.05 mfd. (C35) |
| 14626 | Capacitor—.07 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 37868 | Capacitor—0.5 mfd. |
| 37250 | Capacitor—Electrolytic—20 mfd., 250 volts |
| 37867 | Capacitor—Electrolytic—30 mfd., 250 volts |
| 31581 | Cell—Bias cell |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—"A" and "B" bands |
| 35624 | Coil—Oscillator coil—"19-13 meter" band |
| 35625 | Coil—Oscillator coil—"25 meter" band |
| 35626 | Coil—Oscillator coil—"31 meter" band |
| 35619 | Condenser—Variable tuning condenser |
| 37833 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 28 inch overall length) |
| 34662 | Cord—Pointer cord (approx. 54 inch overall length) |
| 35788 | Core—Adjustable core and stud for "A" and "B" band oscillator coil |
| 31259 | Core—Adjustable core and stud for "19-13 meter," "25 meter," and "31 meter" bands oscillator coils |
| 35627 | Drum—Drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 31580 | Holder—Bias cell holder |
| 5119 | Plug—3-contact female plug for speaker cable |
| 14404 | Plug—7-prong male plug for power input cable |
| 35641 | Pulley—Drive cord pulley |
| 35630 | Pulley—Drive cord pulley located between the range switch shaft and the tuning shaft |
| 13714 | Resistor—5,600 ohms, ½ watt |
| 30151 | Resistor—18,000 ohms, 1 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30963 | Resistor—820,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30208 | Resistor—1.2 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drive drum |
| 35637 | Shaft—Tuning shaft |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Drive cord spring |
| 31418 | Spring—Pointer cord spring |
| 35640 | Support—Drive cord pulley support with one pulley |
| 35639 | Support—Drive cord pulley support with two pulleys |
| 35622 | Support—Tuning shaft and flywheel support |
| 33397 | Switch—Tone switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 37898 | Transformer—Driver transformer |
| 37924 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for pulley |
| 2917 | Washer—"C" washer for tuning shaft |
| | **POWER SUPPLY ASSEMBLIES** |
| 30433 | Capacitor—470 mmfd., moulded mica |
| 30673 | Capacitor—470 mmfd., mica |
| 35573 | Capacitor—.008 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32405 | Capacitor—Electrolytic 16 mfd., 350 volts |
| 37834 | Case—Power supply case only—less case cover |
| 14289 | Clip—Battery clips |
| 37925 | Coil—Choke coil |
| 5140 | Fuse—5 Amperes |
| 34765 | Resistor—100 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 35572 | Resistor—2,200 ohms, ½ watt |
| 14409 | Socket—Female socket for battery cable |
| 12241 | Socket—Vibrator socket |
| 35544 | Transformer—Vibrator transformer |
| 35543 | Vibrator—Plug-in vibrator |
| | **SPEAKER ASSEMBLIES (RL-92-5)** |
| 32907 | Cap—Dust cap |
| 36077 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36103 | Decalcomania—"On-off" decal |
| 37839 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 35712 | Dial—Glass dial scale |
| 37838 | Frame—Dial frame complete—less indicator and dial scale |
| 35648 | Indicator—Station selector indicator |
| 37837 | Knob—Range switch or volume control knob |
| 35650 | Knob—Tone switch knob |
| 34489 | Knob—Tuning knob |
| 14270 | Spring—Retaining spring for knobs |

### Range Switch in QB1:

In Replacement Parts, add Stock No. 35621 range switch.




The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 150° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

MODEL QB 9

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-529H)** |
| 37976 | Bracket—Tone control bracket |
| 35642 | Calibrator—Drive drum calibrator |
| 37250 | Capacitor—Electrolytic, 20 mfd., 250 volts |
| 37867 | Capacitor—Electrolytic, 30 mfd., 250 volts |
| 12714 | Capacitor—Air trimmer, medium, 2-12 mmf. |
| 34654 | Capacitor—Mica trimmer comprising 3 sections of 2.5-10 mmf. each |
| 35646 | Capacitor—6 mmf., ceramic |
| 36012 | Capacitor—15 mmf., ceramic |
| 39608 | Capacitor—15 mmf., silvered mica |
| 35644 | Capacitor—47 mmf., ceramic |
| 39620 | Capacitor—47 mmf., silvered mica |
| 12723 | Capacitor—56 mmf., moulded |
| 30949 | Capacitor—56 mmf., unmoulded |
| 35645 | Capacitor—68 mmf., ceramic |
| 39624 | Capacitor—68 mmf., silvered mica |
| 39628 | Capacitor—100 mmf., moulded |
| 30904 | Capacitor—100 mmf., unmoulded |
| 13003 | Capacitor—180 mmf., moulded |
| 39636 | Capacitor—220 mmf., moulded |
| 39646 | Capacitor—560 mmf., silvered mica |
| 35643 | Capacitor—3,000 mmf., tubular |
| 34459 | Capacitor—.0025 mfd., 1,400 volts |
| 4838 | Capacitor—.005 mfd., 500 volts |
| 4937 | Capacitor—.01 mfd., 1,000 volts |
| 4886 | Capacitor—.05 mfd., 400 volts |
| 14626 | Capacitor—.07 mfd., 400 volts |
| 32786 | Capacitor—.1 mfd., 300 volts |
| 37801 | Capacitor—.25 mfd., 300 volts |
| 12741 | Capacitor—.5 mfd., 150 volts |
| 31581 | Cell—Bias cell |
| 35632 | Coil—Antenna coil, "A" band |
| 35631 | Coil—Antenna coil, spread band |
| 35623 | Coil—Oscillator coil, "A" and "B" band |
| 35624 | Coil—Oscillator coil, 19-13 meter band |
| 35625 | Coil—Oscillator coil, 25 meter band |
| 35626 | Coil—Oscillator coil, 31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 38412 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 28-in. overall length) |
| 34662 | Cord—Indicator cord (approx. 53-in. overall length) |
| 35788 | Core—Adjustable core and stud for "A" and "B" bands oscillator coil |
| 12006 | Core—Adjustable core and stud for I.F. transformers |
| 31259 | Core—Adjustable core and stud for 19-13 meter, 25 meter and 31 meter bands oscillator coils |
| 35627 | Drum—Drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 31580 | Holder—Bias cell holder |
| 5119 | Plug—3-contact plug for speaker cable |
| 33789 | Plug—8-prong male plug for power input cable |
| 35641 | Pulley—Drive cord pulley |
| 35630 | Pulley—Drive cord pulley located between knob shafts |
| 34761 | Resistor—10 ohms, ½ watt |
| 12262 | Resistor—680 ohms, ½ watt |
| 13714 | Resistor—5,600 ohms, ½ watt |
| 30149 | Resistor—8,200 ohms, 1 watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30562 | Resistor—680,000 ohms, ½ watt |
| 30963 | Resistor—820,000 ohms, ½ watt |
| 30652 | Resistor—1 megohm, ½ watt |
| 30649 | Resistor—2.2 megohm, ½ watt |
| 14350 | Screw—No. 8-32 square head set screw |
| 35949 | Shaft—Tuning knob shaft |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Drive cord spring |
| 31418 | Spring—Indicator cord spring |
| 31261 | Spring—Retaining spring for adjustable core and studs |
| 12007 | Spring—Retaining spring for I.F. transformers—core and stud |
| 35640 | Support—Pulley support complete with pulley |
| 35639 | Support—Pulley support complete with three (3) pulleys |
| 35622 | Support—Tuning shaft and flywheel support |
| 35947 | Switch—Range switch |
| 39738 | Switch—Tone control switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 37898 | Transformer—Driver transformer |
| 37924 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for pulley No. 35630 |
| 2917 | Washer—"C" washer for tuning shaft |
| | **VIBRATOR POWER SUPPLY ASSEMBLIES (RS-115B)** |
| 32405 | Capacitor—Electrolytic, 16 mfd., 350 volts |
| 30433 | Capacitor—470 mmf., moulded |
| 35573 | Capacitor—.008 mfd., 1,200 volts |
| 37514 | Capacitor—.01 mfd., 1,000 volts |
| 14289 | Clip—Battery clip (1 set) |
| 37925 | Coil—Choke coil |
| 5140 | Fuse—5 amp. |
| 33969 | Plug—Female plug for power supply cable |
| 34765 | Resistor—100 ohms, ½ watt |
| 34767 | Resistor—2,200 ohms, ½ watt |
| 12241 | Socket—Vibrator socket |
| 39739 | Transformer—Vibrator transformer |
| 35543 | Vibrator—Plug-in vibrator |
| | **SPEAKER ASSEMBLIES (RL-79C3)** |
| 31825 | Cap—Dust cap |
| 39741 | Coil—Field coil (8 ohms) |
| 32906 | Coil—Neutralizing coil |
| 38392 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required. |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36103 | Decalcomania—Power switch decal |
| 37839 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 39744 | Dial—Glass dial scale |
| 39743 | Indicator—Station selector indicator |
| 35650 | Knob—Tone control knob |
| 37256 | Knob—Tuning knob |
| 38334 | Knob—Volume control or range switch knob |
| 39742 | Plate—Dial plate complete with pointer guide |
| 14270 | Spring—Retaining spring for knob No. 35650 |
| 30900 | Spring—Retaining spring for knobs Nos. 37256 and 38334 |

## Calibration Scale

# MODELS HF-2, HF-4, U-130

## Twelve-Tube, Five-Band, Electric-Tuning, A-C, Radios and Victrola

*Model HF-2*

*Model HF-4*

*Model U-130*

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "49 Meter" Band | 5.92-6.23 mc |
| "31 Meter" Band | 9.48-9.69 mc |
| "25 Meter" Band | 11.68-11.94 mc |
| "19 Meter" Band | 15.08-15.39 mc |

R-F ALIGNMENT FREQUENCIES

| | |
|---|---|
| "A" Band | 600 kc (osc.); 1,500 kc (osc., det., ant.) |
| "49 M" | 6.0 mc (osc.) |
| "31 M" | 9.60 mc (osc., det., ant.) |
| "25 M" | 11.8 mc (osc.) |
| "19 M" | 15.2 mc (osc.) |

Intermediate Frequency ..... 455 kc

RCA TUBE COMPLEMENT

| | | | | | |
|---|---|---|---|---|---|
| (1) RCA-6K7 | R-F Amplifier | (5) RCA-6K7 | 2nd I-F Amp. | (9) RCA-6F6 | Power Output |
| (2) RCA-6A8 | First Detector | (6) RCA-6R7 | 2nd Det., 1st A.F., A.V.C., Muting | (10) RCA-6F6 | Power Output |
| (3) RCA-6J7 | Heterodyne Oscillator | (7) RCA-6J5 | 2nd A.F. Amp. | (11) RCA-6U5 | Tuning Indicator |
| (4) RCA-6K7 | 1st I-F Amp. | (8) RCA-6J5 | Phase Inverter | (12) RCA-5T4 | Rectifier |

Pilot Lamps: (4) ..... 3—6.3 V., 0.25 Amp. Mazda No. 44; 1—6.3 V., 0.15 Amp. Mazda No. 47

POWER SUPPLY RATINGS (Model U-130)

| | Radio Only | Total |
|---|---|---|
| Rating A6 | 105-125 volts, 60 cycles, 125 watts | 150 watts |
| Rating A | 105-125 volts, 50-60 cycles, 125 watts | 150 watts |
| Rating B2 | 105-125 volts, 25 cycles, 125 watts | 150 watts |
| Rating C6 | 105-130/140-160/200-250 volts, 60 cycles, 125 watts | 150 watts |
| Rating C | 105-130/140-160/200-250 volts, 50-60 cycles, 125 watts | 150 watts |

POWER SUPPLY RATINGS (Models HF-2 and HF-4)

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 125 watts |
| Rating B | 105-125 volts, 25- cycles, 125 watts |
| Rating C | 100-130/140-160/195-250 volts, 50-60 cycles, 125 watts |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 12-inch Electrodynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |

PHONOGRAPH (Model U-130 only)

| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch, or Seven 12-inch |
| Turntable Speed | 78 r.p.m. (Adjustable) |
| Type Pickup | Crystal |
| Pickup Impedance | 80,000 ohms at 1,000 cycles |

## ADJUSTMENTS FOR ELECTRIC TUNING

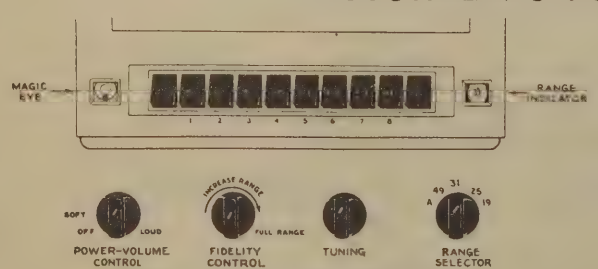
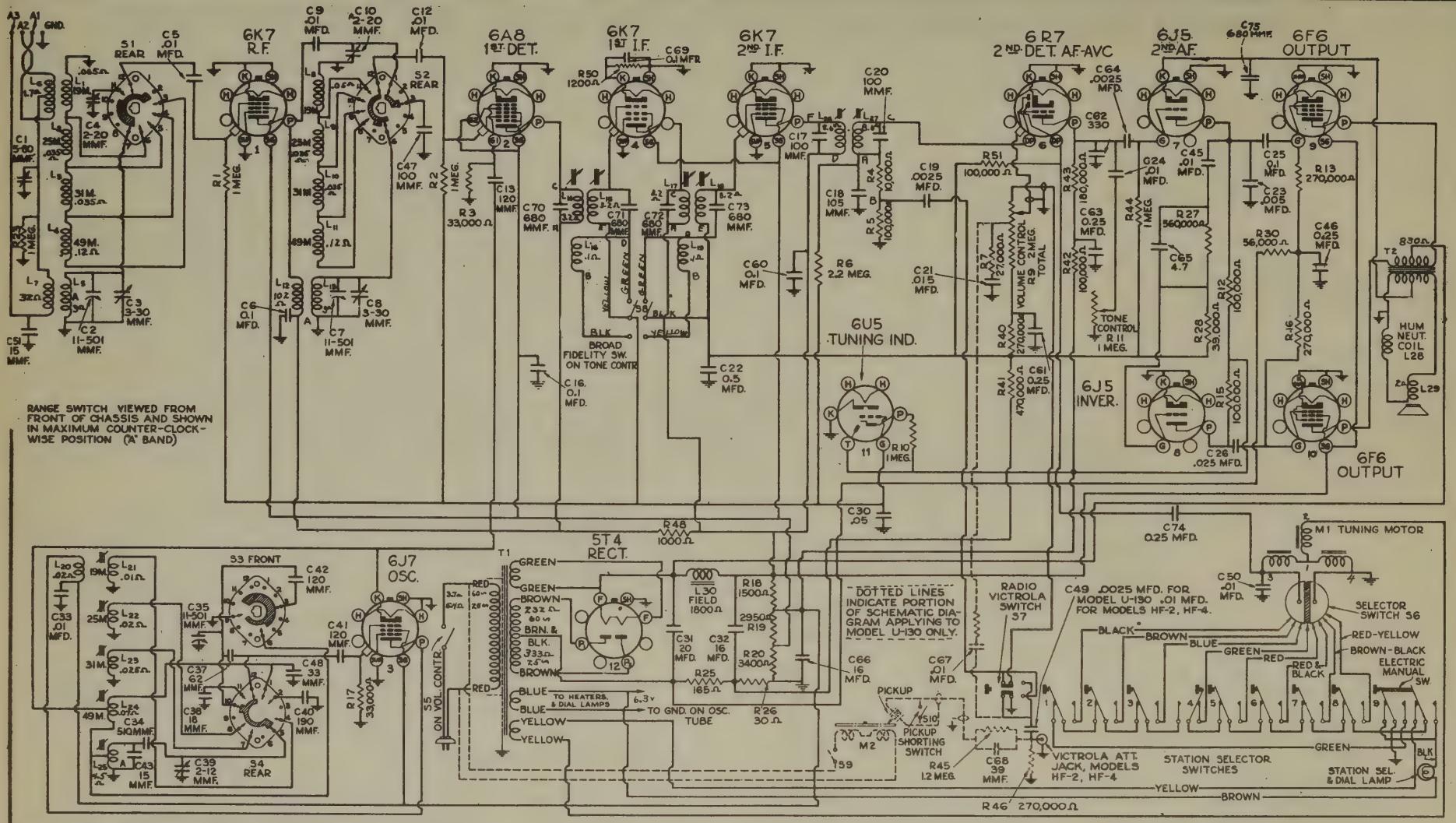



*Figure 1—Location of Controls*

The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Turn Fidelity Control maximum counter-clockwise.
4. Press down the "dial-tuning" (right-hand) button.
5. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
6. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down, central dial lamp will light brightly or dully, depending on which side of disc, contact is. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
7. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
8. Repeat this process for the remaining stations.


6K7 R.F.
6A8 1ST DET.
6K7 1ST I.F.
6K7 2ND I.F.
6R7 2ND DET. A.F.-AVC
6J5 2ND A.F.
6F6 OUTPUT
6U5 TUNING IND.
6J5 INVER.
6F6 OUTPUT
5T4 RECT.
6J7 OSC.
RANGE SWITCH VIEWED FROM FRONT OF CHASSIS AND SHOWN IN MAXIMUM COUNTER-CLOCK-WISE POSITION ("A" BAND)
BROAD FIDELITY SW. ON TONE CONTR
VOLUME CONTROL R9 2 MEG. TOTAL
TONE CONTROL R11 1 MEG.
HUM NEUT. COIL L28
DOTTED LINES INDICATE PORTION OF SCHEMATIC DIAGRAM APPLYING TO MODEL U-130 ONLY.
RADIO VICTROLA SWITCH 37
C49 .0025 MFD. FOR MODEL U-130 .01 MFD. FOR MODELS HF-2, HF-4.
M1 TUNING MOTOR
SELECTOR SWITCH 56
RED-YELLOW
BROWN-BLACK
ELECTRIC MANUAL SW.
PICKUP
PICKUP SHORTING SWITCH
VICTROLA ATT. JACK, MODELS HF-2, HF-4
STATION SELECTOR SWITCHES
STATION SEL. & DIAL LAMP
TO HEATERS & DIAL LAMPS
TO GND. ON OSC. TUBE
ON VOL. CONTR.
R46 270,000Ω

*Schematic Circuit Diagram*

**RCA Victor Master Antenna Kit.**—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

**Other Antennas.**—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

**Precautionary Lead Dress.**—

Leads on spread-band antenna and r-f coils and trimming capacitors should be kept short as possible.

Keep black lead from L25 away from C38 and L24.

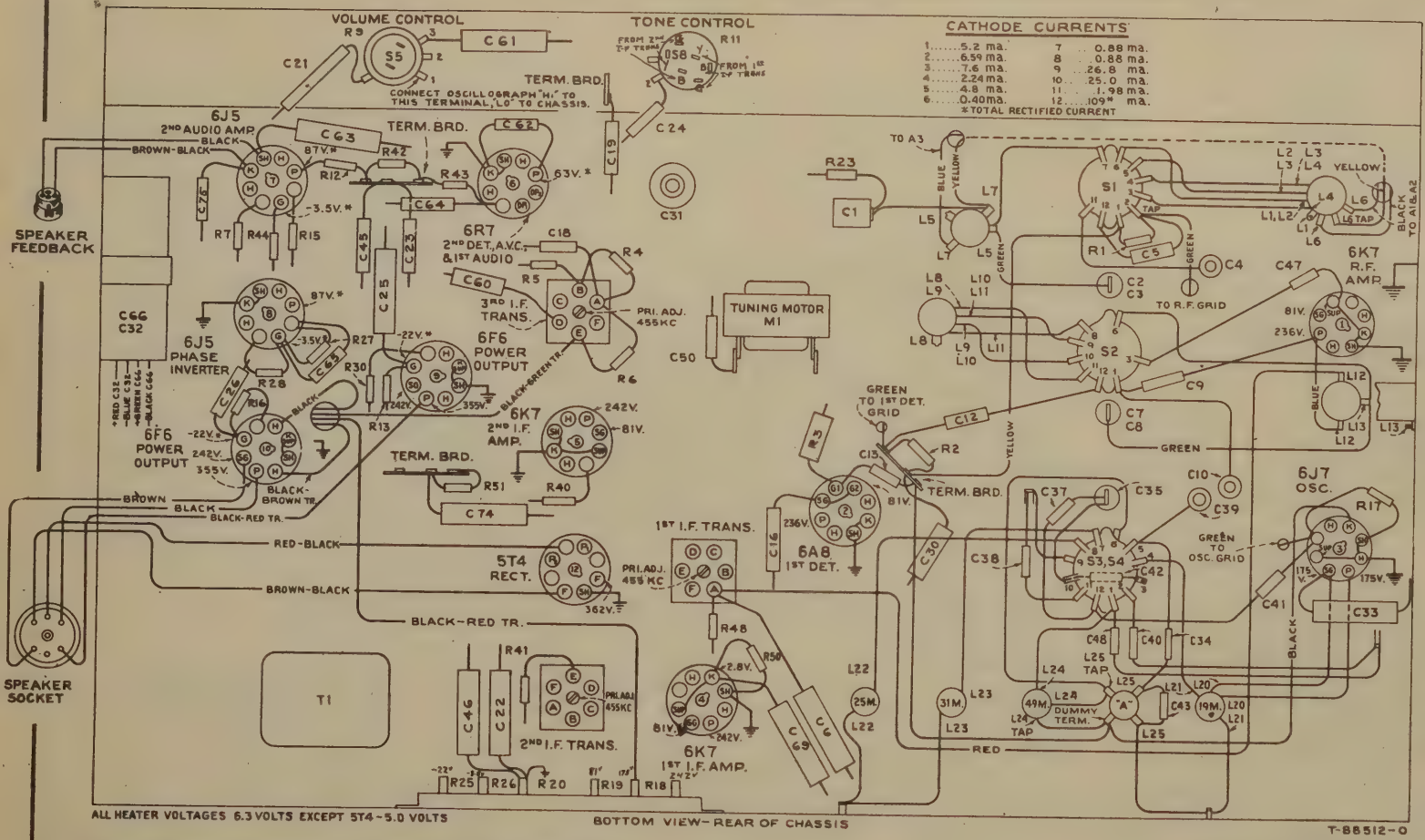
Keep black lead from L25 to cathode lug on 6J7 away from R17.

Blue and black leads from antenna board to coils must be twisted.

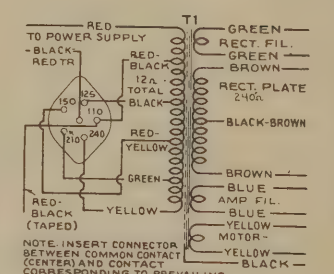
The power cord lead and the primary lead of the power transformer which connect to the power switch should be twisted together, and kept away from Volume Control.

Keep C13 away from the 6A8 control grid lead and from the chassis.

Shielded leads to Victrola jack must be dressed away from switch terminals and jack.

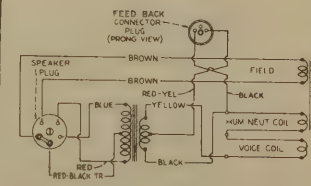



*R-F Wiring Diagram and Socket Voltages*




UNIVERSAL TRANS. CONNECTIONS

**Above** — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)




**Above** — Connections and Colors of Loudspeaker Wiring.

*NOTE: Due to inverse feedback used on these models, it is very important to connect speaker, speaker cable, and feedback cable, exactly as shown.*

**Noise-Reducing Adjustment.**—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C1 to a point where this noise is reduced to a minimum.

**This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer should be screwed all the way down.**

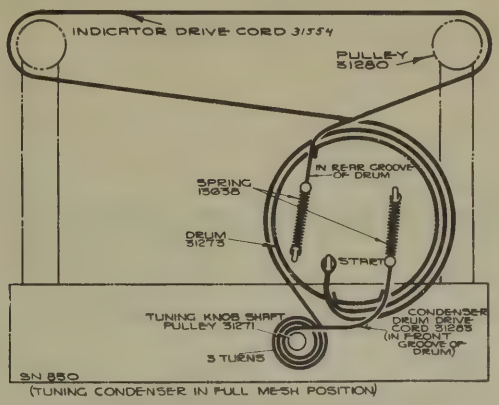
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

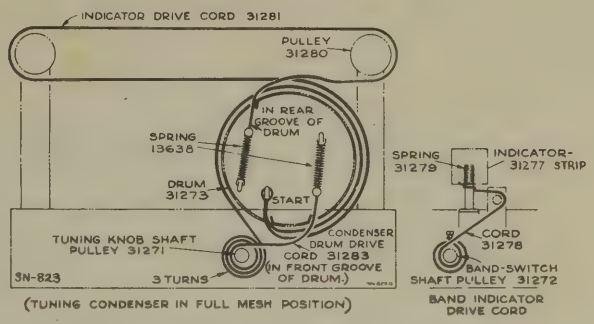
**Reduction of Residual Hum:**

It may be found in a few instances that hum induction will take place between the power transformer wiring and the volume control circuit. This can be prevented or remedied by dressing the brown lead connected to No. 6 (P) terminal of the 5T4 socket well away from the No. 6 (blank) pin of the 6K7 I-F socket and from the black lead connected to same.

**REFER TO INDEX FOR INFORMATION ON ELECTRIC TUNING AND AUTOMATIC RECORD CHANGER.**




*Models HF-4, U-130*




*Model HF-2*

*Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch*

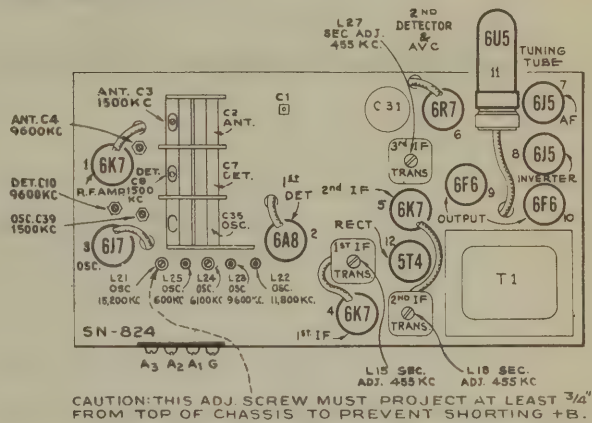
# ALIGNMENT PROCEDURE

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**




CAUTION: THIS ADJ. SCREW MUST PROJECT AT LEAST 3/4" FROM TOP OF CHASSIS TO PREVENT SHORTING +B.

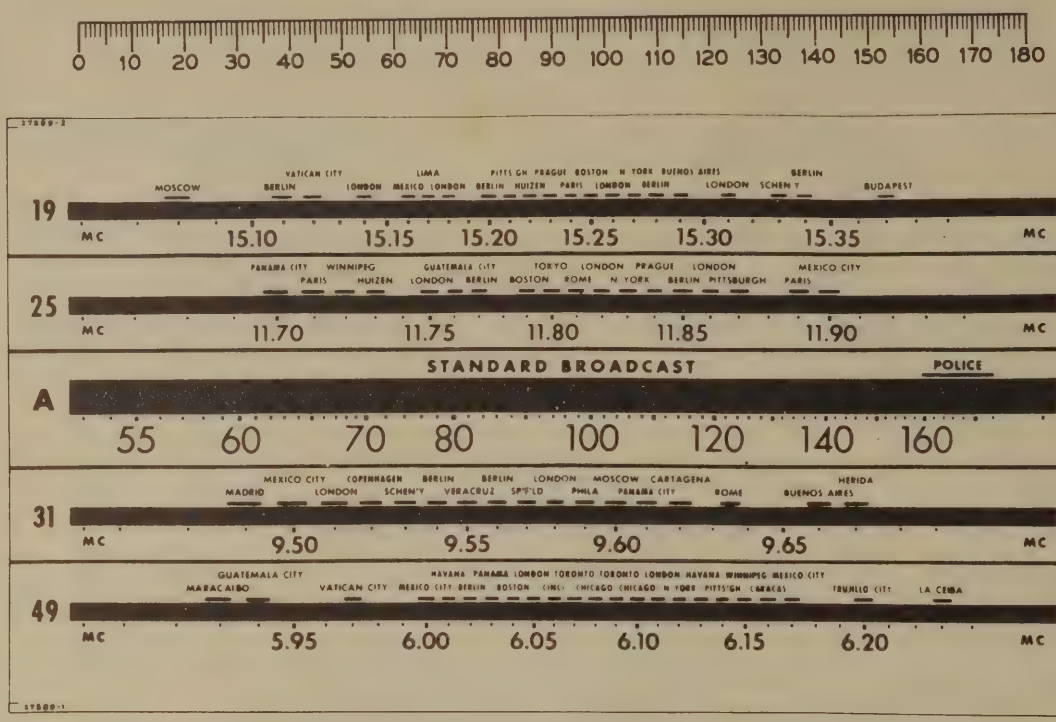
*Tube and Trimmer Locations*

| Steps | Connect the high side of test-oscillator to— | Tune Test-Oscillator to— | Range Selector | Set Tuning Gang to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| No. 1 | Turn Fidelity Control to Maximum Counter-clockwise position. | | | | |
| No. 2 | 6K7 2nd I-F grid cap in series with .01 mfd. | 455 kc | "A" | Quiet Point between 550-750 kc | L26, L27 (3rd I-F transformer) |
| No. 3 | 6K7 1st I-F grid cap in series with .01 mfd. | 455 kc | "A" | Quiet Point between 550-750 kc | L17, L18 (2nd I-F transformer) |
| No. 4 | 6A8 1st-det. grid cap in series with .01 mfd. | 455 kc | "A" | | L14, L15 (1st I-F transformer) |
| No. 5 | A2, in series with 100 mmf. A3 to Chassis. | 1,500 kc | "A" | 1,500 kc (151.5°) | C39 (osc.) C3 (ant.) C8 (det.) |
| No. 6 | A2, in series with 100 mmf. A3 to Chassis. | 600 kc | "A" | 600 kc (30.0°) | L25 (osc.) |
| No. 7 | A2, in series with 100 mmf. A3 to Chassis. | 1,500 kc | "A" | 1,500 kc (151.5°) | C39 (osc.) |
| No. 8 | A2. Connect A1 to chassis. | 6,100 kc | "49M" | 6,100 kc (106°) | L24 (osc.)* |
| No. 9 | A2. Connect A1 to chassis. | 9,600 kc | "31M" | 9,600 kc (102°) | L23 (osc.)** C4 (ant.) C10 (det.) |
| No. 10 | A2. Connect A1 to chassis. | 11,800 kc | "25M" | 11,800 kc (90.0°) | L22 (osc.)** |
| No. 11 | A2. Connect A1 to chassis. | 15,200 kc | "19M" | 15,200 kc (78.0°) | L21 (osc.)** |

* Use maximum inductance peak (plunger in) if two peaks can be obtained.

** Use minimum inductance peak (plunger out) if two peaks can be obtained.

Note that oscillator tracks **above** signal frequency on all bands except "49M," where it tracks **below**.




*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | RECEIVER ASSEMBLIES |
| 31492 | Bearing—Variable condenser motor rotor adjustment bearing—less bracket and cup assembly—Model U-130 only |
| 31253 | Board—Antenna and ground terminal board—Models HF-2 and HF-4 |
| 31531 | Board—Antenna and ground terminal board—Model U-130 only |
| 31276 | Bracket—Band indicator mounting bracket complete except less band indicating strip, cord, and tension spring |
| 31282 | Bracket—Magic Eye bracket and holder |
| 31491 | Bracket—Bracket and bearing cup for variable condenser motor rotor adjustment—Model U-130 only |
| 30766 | Cap—Magic Eye rubber cap |
| 12884 | Capacitor—Trimmer capacitor 2-20 mmfd. (C4, C10) |
| 12714 | Capacitor—Trimmer capacitor 2-12 mmfd. (C39) |
| 14392 | Capacitor—4.7 mmfd. (C65) |
| 31252 | Capacitor—Adjustable trimmer 5-80 mmfd. (C1) |
| 12896 | Capacitor—15 mmfd. (C51) |
| 31353 | Capacitor—15 mmfd. (C43) |
| 31350 | Capacitor—18 mmfd. (C38) |
| 31354 | Capacitor—33 mmfd. (C48) |
| 13545 | Capacitor—39 mmfd. (C68)—Model U-130 only |
| 31349 | Capacitor—62 mmfd. (C37) |
| 12720 | Capacitor—100 mmfd. (C18, C47) |
| 31270 | Capacitor—100 mmfd. (C17, C20) |
| 12724 | Capacitor—120 mmfd. (C13, C41, C42) |
| 31351 | Capacitor—190 mmfd. (C40) |
| 12952 | Capacitor—330 mmfd. (C62) |
| 31348 | Capacitor—510 mmfd. (C34) |
| 31552 | Capacitor—680 mmfd. (C70, C71, C72, C73) |
| 14498 | Capacitor—680 mmf. (C75) |
| 5107 | Capacitor—.0025 mfd. (C19, C49, C64) (C49—Model U-130 only) |
| 4838 | Capacitor—.005 mfd. (C23) |
| 4858 | Capacitor—.01 mfd. (C9, C45) |
| 14393 | Capacitor—.01 mfd. (C5, C12, C24, C33, C49, C50, C67) (C49—Models HF-2 and HF-4 only) (C67—Model U-130 only) |
| 11315 | Capacitor—.015 mfd. (C21) |
| 4870 | Capacitor—.025 mfd. (C26) |
| 30882 | Capacitor—.05 mfd. (C30) |
| 4839 | Capacitor—0.1 mfd. (C6, C16, C25, C60, C69) |
| 30965 | Capacitor—0.25 mfd. (C74) |
| 12484 | Capacitor—0.25 mfd. (C46, C61, C63) |
| 30867 | Capacitor—0.5 mfd. (C22) |
| 31553 | Capacitor—Comprising 2 sections each 16 mfd. (C32, C66) |
| 31495 | Capacitor—20 mfd. (C31) |
| 31544 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—25 cycle models only |
| 31237 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—50-60 cycle models only |
| 31263 | Coil—"A" band antenna coil (L5, L7) |
| 31264 | Coil—19, 25, 31, and 49 meter bands antenna coil (L1, L2, L3, L4, L6) |
| 31257 | Coil—"A" band oscillator coil (L25) |
| 31258 | Coil—19 meter band oscillator coil (L20, L21) |
| 31265 | Coil—"A" band r-f coil (L12, L13) |
| 31266 | Coil—19, 25, 31, and 49 meter bands r-f coil (L8, L9, L10, L11) |
| 31254 | Coil—25 meter band oscillator coil (L22) |
| 31255 | Coil—31 meter band oscillator coil (L23) |
| 31256 | Coil—49 meter band oscillator coil (L24) |
| 31234 | Condenser—3-gang variable condenser (C2, C3, C7, C8, C35) |
| 31345 | Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip |
| 31344 | Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip |
| 31231 | Contact—Contact tip for station selector plunger |
| 31278 | Cord—Band indicator drive cord |
| 31281 | Cord—Indicator pointer drive cord—Model HF-2 only |
| 31554 | Cord—Indicator pointer drive cord—Models HF-4 and U-130 only |
| 31283 | Cord—Variable condenser drum drive cord |
| 31260 | Core—Adjustable core and stud for "A" band oscillator coil |
| 31269 | Core—Adjustable core for i-f transformers |
| 31259 | Core—Adjustable core and stud for 19, 25, 31, or 49 meter band oscillator coils |
| 31273 | Drum—Indicator drive cord drum |

# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31240 | Flywheel—Variable condenser drive motor flywheel |
| 31239 | Gear—Variable condenser knob shaft drive gear and hub |
| 31545 | Gear—Variable condenser intermediate drive gear and pinion gear—25 cycle models only |
| 31238 | Gear—Variable condenser intermediate drive gear and pinion gear—50-60 cycle models only |
| 31277 | Indicator—Band indicator strip—Models HF-2 and HF-4 |
| 31555 | Indicator—Band indicator strip—Model U-130 |
| 11891 | Lamp—Dial lamp |
| 31480 | Lamp—Tuning indicator pilot lamp |
| 31243 | Leather—Friction leather insert for flywheel |
| 31346 | Lock-plate—Push button switch lock-plate—comprising 10 contact locks in one strip |
| 31246 | Motor—Variable condenser drive motor for 25 cycle models (M1) |
| 31235 | Motor—Variable condenser drive motor for 50-60 cycle models (M1) |
| 31228 | Plate—Station selector contact—less plungers |
| 31227 | Plate—Station selector mounting — mounts on rear of variable condenser |
| 30868 | Plug—2-contact female plug for motor power cable—Model U-130 only |
| 31572 | Plug—3-contact female plug for speaker cable |
| 12493 | Plug—5-contact female plug for speaker cable |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 31271 | Pulley—Motor drive pulley—fastens on motor drive knob shaft |
| 31272 | Pulley—Range switch pulley |
| 31548 | Resistor—Voltage divider comprising one 1,500 ohms, one 2,950 ohms, one 3,400 ohms, one 30 ohms, and one 165 ohms, sections (R18, R19, R20, R25, R26) |
| 14720 | Resistor—1,000 ohms, ½ watt (R48) |
| 12267 | Resistor—1,200 ohms, ½ watt (R50) |
| 14559 | Resistor—10,000 ohms, ½ watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R3, R17) |
| 31573 | Resistor—39,000 ohms, 1/10 watt (R28) |
| 12288 | Resistor—56,000 ohms, ½ watt (R30) |
| 14560 | Resistor—100,000 ohms, ½ watt (R5, R12, R15, R42, R51) |
| 13698 | Resistor—180,000 ohms, ½ watt (R43) |
| 12199 | Resistor—270,000 ohms, ½ watt (R13, R16, R40, R46) (R46—Model U-130 only) |
| 12285 | Resistor—470,000 ohms, ½ watt (R41) |
| 11397 | Resistor—560,000 ohms, 1/10 watt (R27) |
| 12013 | Resistor—1 meg., 1/10 watt (R10) |
| 13730 | Resistor—1 meg., ½ watt (R1, R2, R23, R44, R47) (R47—Model U-130 only) |
| 30208 | Resistor—1.2 meg., ½ watt (R45)—Model U-130 only |
| 12679 | Resistor—2.2 meg., ½ watt (R6) |
| 14887 | Retainer—Indicator pointer drive cord pulley retainer |
| 31233 | Disc—Station selector rotor disc — mounts on rear of variable condenser shaft |
| 31241 | Screw—¼-20 headless, cone pointer set screw for flywheel |
| 4119 | Screw—No. 8-32 headless set screw for gear Stock No. 31239 |
| 4669 | Screw—No. 8-32 x ¼ set screw for pulley Stock Nos. 31271 and 31272, and drum Stock No. 31273 |
| 14350 | Screw—No. 8-32 square head set screw for station selector rotor disc |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31347 | Socket—Pickup input socket and bracket |
| 31251 | Socket—Radiotron socket |
| 31365 | Socket—Tuning indicator lamp insulated socket |
| 31242 | Spring—Friction leather tension spring for flywheel |
| 13638 | Spring—Indicator pointer drive cord, and variable condenser drum drive cord tension spring |
| 31232 | Spring—Contact tip spring for station selector plunger |
| 12007 | Spring—Retaining spring for adjustable core |
| 31230 | Spring—Station selector plunger body spring |
| 31279 | Spring—Tension spring for band indicator |
| 31970 | Spring—Tension spring for push button switch latch bar |
| 31494 | Spring—Variable condenser motor rotor adjustment bearing spring for 25 cycle models—Model U-130 |
| 31493 | Spring—Variable condenser motor rotor adjustment bearing spring for 50-60 cycle models—Model U-130 |
| 31236 | Support—Variable condenser drive gear mounting support and studs assembly |
| 31490 | Support—Variable condenser motor mounting support and studs—25 cycle models only—Model U-130 only |
| 31245 | Support—Variable condenser motor mounting support and studs—25 cycle models only—Models HF-2 and HF-4 only |
| 31489 | Support—Variable condenser motor mounting support and studs—50-60 cycle models only—Model U-130 |
| 31244 | Support—Variable condenser motor mounting support and studs—50-60 cycle models only—Models HF-2 and HF-4 only |
| 31360 | Switch—Pickup switch for mounting on push button switch (S7) |
| 31312 | Switch—Push button switch and bracket assembly |
| 31247 | Switch—Range switch (S1, S2, S3, S4) |
| 31546 | Tone Control and fidelity switch (R11, S8) |
| 31565 | Transformer—First i-f transformer (L14, L15, C70, C71, L16) |
| 31551 | Transformer—Second i-f transformer (L17, L18, L19, C72, C73) |
| 31549 | Transformer—Third i-f transformer (L26, L27, C17, C20) |
| 31226 | Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) |
| 31225 | Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) |
| 31308 | Transformer—Power transformer 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) |
| 31547 | Volume Control and power switch (R9, S5) |

FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON RP-132

## SPEAKER ASSEMBLIES
(Speaker RL70F-5)

| STOCK No. | DESCRIPTION |
|---|---|
| 13866 | Cap—Dust cap for cone center |
| 11234 | Coil—Field coil (L30) |
| 11469 | Coil—Hum neutralizing coil (L28) |
| 31275 | Cone—Speaker cone and voice coil (L29) |
| 31567 | Plug—3-contact male plug for speaker |
| 31539 | Plug—5-contact male plug for speaker |
| 31556 | Speaker complete |
| 31557 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |

## MISCELLANEOUS ASSEMBLIES

| STOCK No. | DESCRIPTION |
|---|---|
| 31358 | Button—Station selector push button |
| 13103 | Cap—Pilot lamp cap—Model U-130 only |
| 31286 | Carriage—Indicator pointer slide carriage—Model HF-2 only |
| 31456 | Cover—8-protective covers for push button markers |
| 31540 | Cushion—Chassis mounting cushion and screw assemblies sufficient for one chassis—Model U-130 only |
| 31541 | Cushion—Motor plate mounting cushion and clamp assembly, sufficient for one instrument—Model U-130 only |
| 31562 | Dial—Station selector dial scale and crystal—Models HF-4 and U-130 only |
| 31363 | Dial—Station dial scale and crystal — Model HF-2 only |
| 31561 | Escutcheon—Dial escutcheon less dial scale, and push buttons—Models HF-4 and U-130 only |
| 31362 | Escutcheon—Dial escutcheon less dial scale, and push buttons—Model HF-2 only |
| 30698 | Hinge—Cabinet lid hinge—Model U-130 only |
| 4585 | Hinge—Door hinges (1 top and 1 bottom) sufficient for one door—Model HF-4 only |
| 31564 | Holder—Needle card holder—Model U-130 |
| 31560 | Indicator—Station selector indicator pointer and carriage assembly—Models HF-4 and U-130 |
| 31284 | Indicator—Station selector indicator pointer—less carriage—Model HF-2 only |
| 31355 | Knob—Station selector, volume control, tone control, or range switch knob |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31457 | Marker—"Record Player" push button marker |
| 31589 | Marker—Station call letter push button markers |
| 31566 | Pull—Door pull—Model HF-4 only |
| 31287 | Rod—Indicator pointer slide rod |
| 31285 | Screen—Dial color screen—Model HF-2 only |
| 31559 | Screen—Dial color screen—Models HF-4 and U-130 only |
| 4560 | Screw—Chassis mounting screw, washer, and lockwasher (4 required)—Models HF-2 and HF-4 only |
| 31558 | Spring—Indicator pointer slide stop spring |
| 14270 | Spring—Retaining spring for knob Stock No. 31355 |
| 31478 | Support—Cabinet lid support — Model U-130 only |
| 31470 | Suspension—Motor board suspension springs, screw, and lockwasher (4 required)—Model U-130 only |

## ANTENNA ASSEMBLIES

| STOCK No. | DESCRIPTION |
|---|---|
| 31426 | Counterpoise Line—Additional length 60 ft. long |
| 12426 | Insulator—Strain and counterpoise insulator |
| 9816 | Transmission Line—Additional length 60 ft. long |

# MODELS O-2, O-6, O-10, O-12, O-14, O-16, and O-19

## Portable Hand-Wound Phonographs

MODEL O-2

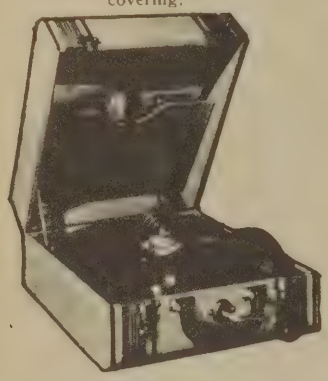
O-2—Available with blue, black or brown covering.

MODEL O-6

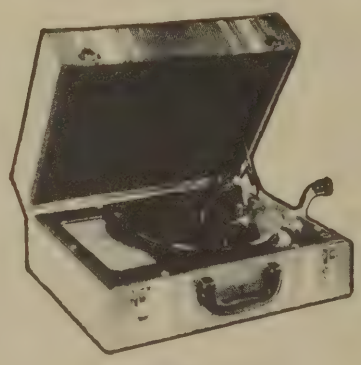
O-6—Available with two-tone brown or black and gray covering.

MODEL O-12

Available with blue, black or brown covering.



MODELS O-10*, O-19



MODEL O-14

MODEL O-16

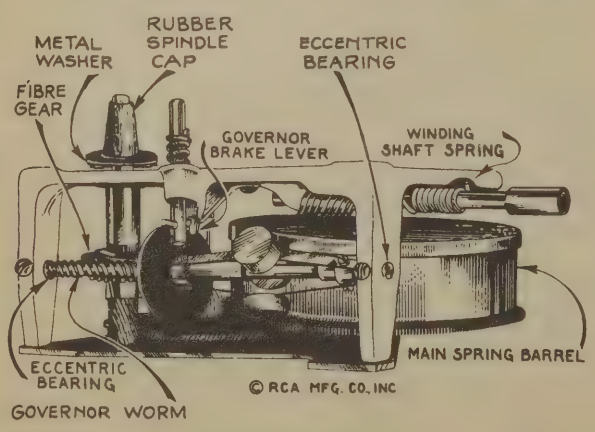
* Model O-10 is same as O-19 but in black or blue covering.

**CAUTION.**—Allow the motor mechanism to run down completely before attempting adjustment, repairs, or replacements.

**Governor Adjustments.**—The mesh of the worm and fiber gears is adjusted by rotation of the eccentric spindle bearings. The adjustments should be made so that the worm meshes properly with the fiber gear and rotates freely without binding. The bearings should be accurately aligned with each other. The minimum of spindle end-play which permits smooth operation should be used.

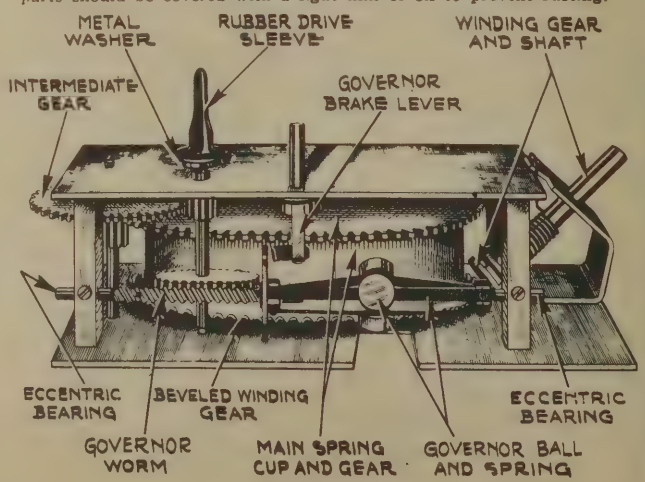
**Speed Regulator Lever.**—After assembly, adjust the speed regulator until the turntable rotates at 78 r. p. m.; loosen the speed regulator screw and set pointer to center of speed indicator scale; tighten screw and recheck turntable speed.

**Lubrication.**—All moving parts of the motor should be thoroughly cleaned and lubricated every six months to prevent excess wear and to assure proper operation. A small amount of grease should be applied to the worm gear of the governor, the gear of the winding shaft, and on the small pinion gear. All other points, including regulator friction pad, should be lubricated with light oil. All motor parts should be covered with a light film of oil to prevent rusting.




SIDE-WIND MOTOR O-12

Used in O-14, O-16, and some production of O-10, O-19




ANGLE-WIND MOTOR

Used in some production of O-10, O-19, O-2 & O-6

**Motor Adjustments:**

Speed variations or WOWS may be experienced with these instruments due to a variety of causes. Some of the troubles and corrections are listed below:

**1. A regular WOW occurring on every revolution of the turntable, or every few revolutions.**

(a) A frequent cause of this difficulty is faulty adjustment of the governor springs. If the governor weights seem to oscillate in and out when the motor is in operation, the spring tension of the three weights may not be evenly balanced. Loosen the three spring clamping screws and position the springs so that all three weights are held with the same tension.

(b) Another possible cause of this trouble is faulty adjustment of the governor bearings. To adjust these bearings:

**First:** Set the speed regulator lever so that the face of the felt friction pad is accurately parallel to the governor friction plate.

**Second:** Loosen both governor bearing set screws and position the governor so that the motor revolves at rated speed (78.4 rpm).

**Third:** Adjust the mesh of the worm and the fiber drive gear by turning the eccentric bearings. These should be set so that the worm meshes properly with the fiber gear without binding.

**Fourth:** Adjust the distance between bearings so that the governor turns freely with a minimum of end-play.

(c) A take-up spring is mounted on the governor friction plate shaft to ensure against lost motion and erratic operation of this plate. It is essential that this spring be in place and adjusted to provide adequate tension. It should be positioned as indicated in the sketch.

(d) Marred or broken teeth on either gear on the turntable shaft or on the intermediate gear shaft may cause this trouble. If inspection shows this to be the case, the defective gear should be replaced.

**2. The turntable loses speed or WOWS on the louder parts of a record:**

(a) This may be caused by failure of the governor to respond accurately to speed changes, due to excessive or irregular friction between the sliding friction plate and the governor shaft. When this occurs it may be corrected by removing the weights and working the plate back and forth until it frees up. If the governor shaft does not have a smooth surface it may be necessary to smooth it down slightly using "Crocus Cloth" or to replace the governor.

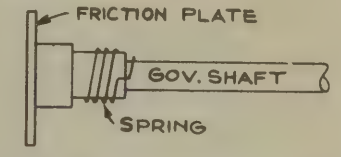
(b) This condition may also be caused by excessive friction in any part of the motor. Be sure that the governor bearings are properly adjusted as described in section 1 (b). Lubricate all bearings in the motor using a high grade light oil such as RCA Stock No. 7227 Spring Motor Oil. The governor shaft, friction plate, and felt friction pad should also be lubricated with this oil. Lubricate the worm with a light grease such as RCA Stock No. 10975 Electric Motor Grease. Remove the main spring and pack it with a graphite lubricant such as RCA Stock No. 7228.

**3. The turntable speed changes erratically over long periods of time.**

(a) This may be caused by binding of the main spring due to improper lubrication. To correct this pack the spring with graphite grease as described in section 2 (b).

(b) Make sure that the top of the main spring housing does not rub on the end of the winding shaft.

(c) Inspect the gear teeth on the main spring gear. If these are marred or broken, it may be necessary to replace the spring assembly.




*Correct Position of Take-Up Spring in Models O-2 and O-6*

*Waver or Wow May be Caused by a Worn Spindle Bearing in the Bottom Plate.*

## Replacement Parts Models O-2, and O-6,

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES (Angle-Wind Motor)** |
| 33373 | Bearing—One set governor shaft bearings |
| 33371 | Cap—Turntable spindle cap |
| 33366 | Gear—Intermediate drive gear and shaft |
| 36570 | Gear—Winding worm gear—located on winding key shaft |
| 36571 | Gear—Winding gear—located on spring barrel shaft |
| 13857 | Governor—Governor assembly complete |
| 36572 | Motor—Spring motor complete |
| 13865 | Screw—Needle holding screw |
| 36573 | Shaft—Winding key shaft and socket—less winding gear |
| 33372 | Sleeve—Rubber drive sleeve and metal damper plate |
| 33367 | Spindle—Turntable spindle and drive gears |
| 13851 | Spring—Turntable brake spring |
| 13835 | Spring—Mainspring, spring barrel and drive gear |
| 13862 | Weight—Governor weight and spring |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33691 | Arm—Tone arm less neck, base, washer, ring, screw and lockwasher |
| 33682 | Brake—Turntable brake |
| 33678 | Cover—Needle cup cover |
| 33680 | Cup—Needle cup |
| 33681 | Escutcheon—Speed lever escutcheon |
| 36574 | Foot - Cabinet foot (glide) |
| 36575 | Handle - Carrying handle (black) |
| 36576 | Handle - Carrying handle (brown) |
| 36577 | Hinge - Cabinet lid hinge |
| 36578 | Key - Winding key (approx. 7" long end to end) |
| 33679 | Lever - Speed indicator lever |
| 33687 | Mounting—Motor mounting assembly |
| 33692 | Neck—Tone arm neck |
| 33690 | Screw—Screw and lockwasher to fasten neck on tone arm |
| 30368 | Sound Box |
| 33683 | Spring—Turntable brake spring |
| 34388 | Spring—Winding shaft spring |
| 33694 | Support—Cabinet lid support |
| 33684 | Support—Sound box support |
| 33689 | Support—Taper tube support |
| 33368 | Turntable - Turntable assembly (black cover) |
| 33370 | Turntable - Turntable assembly (blue cover) |
| 33369 | Turntable - Turntable assembly (brown cover) |
| 36579 | Turntable - Turntable assembly (green cover) |
| 33688 | Washer—Bearing washer and retaining snap ring |

## REPLACEMENT PARTS Model O-12,

| Stock No. | Description | Stock No. | Description |
|---|---|---|---|
| 13849 | Arm—Tone arm less sound box | 13854 | Motor—Spring motor complete |
| 13850 | Brake—Turntable brake complete | 13865 | Screw—Needle holding screw |
| 13845 | Cap—Turntable spindle cap | 13860 | Shaft—Winding key shaft and socket—Less winding gear |
| 13852 | Cup—Needle cup | 30368 | Sound box |
| 13847 | Escutcheon—Speed regulator escutcheon | 13856 | Spindle—Motor spindle and two gears assembled |
| 13855 | Gear—Intermediate drive gear and shaft | 13851 | Spring—Turntable brake spring |
| 13858 | Gear—Winding worm gear—Located on winding key shaft | 13835 | Spring—Mainspring, spring barrel and drive gear |
| 13859 | Gear—Winding gear—Located on spring barrel shaft | 13873 | Turntable—Complete with black cover |
| 13857 | Governor—Governor assembly complete | 13844 | Turntable—Complete with brown cover |
| 13846 | Indicator—Speed regulator arm and pointer | 14181 | Turntable—Complete with blue cover |
| 13861 | Key—Winding key | 13862 | Weight—Governor weight and spring |

### Replacement Drive Motor: O-12

The spring wound motor Stock No. 13854 now supplied for replacement in these portable Victrolas has several mechanical revisions affecting a number of components. It is, therefore, essential to identify the motor being serviced before ordering replacement parts for same. The revised motor as currently supplied can be identified by the rubber sleeve associated with the spindle; the earlier motor does not carry this sleeve. The following parts are for use on the revised motor only; similar parts for the earlier motors, and the remaining parts for both types are given by the O-11, O-12 and O-15 Service Notes:

Stock No.

33366 Gear—Intermediate drive gear and shaft
33367 Spindle—Turntable spindle and drive gears
33368 Turntable—Complete with black cover
33369 Turntable—Complete with brown cover
33370 Turntable—Complete with blue cover
33371 Cap—Turntable spindle cap
33372 Sleeve—Rubber drive sleeve, and metal damper plate
33373 Bearing—One set governor shaft bearings

**IMPORTANT.**—When ordering a complete replacement motor Stock No. 13854 for use on earlier instruments having the motor with sleeveless spindle, it will be necessary to order the proper turntable as listed above. The earlier turntable does not fit the revised motor.

## Replacement Parts Models O-10 and O-19

| STOCK No. | DESCRIPTION |
|---|---|
| | **MISCELLANEOUS ASSEMBLIES** |
| 33691 | Arm—Tone arm less neck, base, washer, ring, screw and lockwasher |
| 33682 | Brake—Turntable brake |
| 33678 | Cover—Needle cup cover |
| 33680 | Cup—Needle cup |
| 33681 | Escutcheon—Speed lever escutcheon for side wind motor |
| 33693 | Escutcheon—Speed lever escutcheon for angle wind motor |
| 11771 | Foot—Cabinet foot |
| 33696 | Handle—Carrying handle |
| 33695 | Hinge—Lid hinge |
| 33685 | Key—Winding key for side wind motor |
| 33686 | Key—Winding key for angle wind motor |
| 33687 | Mounting—Motor mounting assembly |
| 33692 | Neck—Tone arm neck |
| 33690 | Screw—Screw and lockwasher to fasten neck on tone arm |
| 30368 | Sound Box |
| 33683 | Spring—Turntable brake spring |
| 33694 | Support—Cabinet lid support |
| 33684 | Support—Sound box support |
| 33689 | Support—Taper tube support |
| 33369 | Turntable—Turntable assembly for side wind motor |
| 33677 | Turntable—Turntable assembly for angle wind motor |
| 33688 | Washer—Bearing washer and retaining snap ring |
| | **MOTOR ASSEMBLIES (Side-Wind Motor)** |
| 33373 | Bearing—One set governor shaft bearings |

| STOCK No. | DESCRIPTION |
|---|---|
| 33371 | Cap—Turntable spindle cap |
| 33366 | Gear—Intermediate drive gear and shaft |
| 13858 | Gear—Winding worm gear—located on winding key shaft |
| 13859 | Gear—Winding gear—located on spring barrel shaft |
| 13857 | Governor—Governor assembly complete |
| 13854 | Motor—Spring motor complete |
| 13865 | Screw—Needle holding screw |
| 13860 | Shaft—Winding key shaft and socket—less winding gear |
| 33372 | Sleeve—Rubber drive sleeve and metal damper plate |
| 33367 | Spindle—Turntable spindle and drive gears |
| 13851 | Spring—Turntable brake spring |
| 13835 | Spring—Mainspring, spring barrel and drive gear |
| 13862 | Weight—Governor weight and spring |
| | **MOTOR ASSEMBLIES (Angle-Wind Motor)** |
| 33702 | Ball—Governor ball and spring assembly |
| 33698 | Bearing—Governor spindle bearings |
| 33707 | Gear—Beveled winding gear |
| 33704 | Gear—Intermediate gear assembly complete |
| 33705 | Gear—Main spring cup and gear |
| 33699 | Gear—Winding gear, shaft and crank socket |
| 33701 | Governor—Governor assembly complete |
| 33697 | Plate—Top plate assembly |
| 33700 | Sleeve—Rubber drive sleeve and metal damper plate |
| 33703 | Spindle—Turntable spindle complete with gear and pinion |
| 33706 | Spring—Main spring |
| 33708 | Spring—Winding shaft clutch spring |

**Additional Replacement Parts:**

Stock No.

X840 Grille—Grille cloth
35484 Lever — Speed indicator lever for angle-wind motor
33679 Lever — Speed indicator lever for side-wind motor
34388 Spring—Winding shaft spring for side-wind motor

Under "Angle-Wind" Motor add:

11533 Ball—Steel ball
35303 Motor—Motor complete
36483 Spring shaft and rivet

**Angle-Wind Motor:**

Where unsatisfactory performance, due to "WOW" or excessive motor noise is experienced, these conditions may be remedied in the following manner:

(a) Replace rubber drive sleeve and associated washer with revised type rubber sleeve and revised metal washer, Stock No. 33700, making sure to force the sleeve all the way down against the thin metal washer, and snugly into turntable hub. A small quantity of soap applied to the spindle and turntable will facilitate this operation. The revised rubber sleeve is of relatively hard rubber and is accurately machined. The washer has been made thinner to allow a tight fit between spindle nose and rubber sleeve.

(b) Check turntable for wobble and if excessive, correct by simply pressing down on edge of turntable which runs high.

**TEST INSTRUMENT — THEN, IF NECESSARY,** apply the following changes in order given until acceptable performance is obtained.

(c) Replace governor assembly with improved type, Stock No. 33701, and governor bearings with new type, Stock No. 33698.

(d) Replace spindle and fibre gear assembly with later manufactured part, Stock No. 33703.

## REPLACEMENT PARTS Models O-14 and O-16

| Stock No. | Description |
|---|---|
| | **MODEL O-14** |
| 13849 | Arm—Tone arm, less sound box |
| 33373 | Bearing—One set governor shaft bearings |
| 13850 | Brake—Turntable brake complete |
| 33371 | Cap—Turntable spindle cap |
| 13852 | Cup—Needle cup |
| 13847 | Escutcheon—Speed regulator escutcheon |
| 33366 | Gear—Intermediate drive gear and shaft |
| 13858 | Gear—Worm gear—located on winding shaft |
| 13859 | Gear—Winding gear—located on spring barrel |
| 13857 | Governor—Complete |
| 13846 | Indicator—Speed regulator arm and pointer |
| 33685 | Key—Winding key |
| 13854 | Motor—Complete |
| 13865 | Screw—Needle screw |
| 13860 | Shaft—Winding shaft and socket—less gear |
| 33372 | Sleeve—Rubber drive sleeve and damper plate |
| 30368 | Sound Box |
| 33367 | Spindle—Turntable spindle shaft and gear |
| 13851 | Spring—Brake spring |
| 13835 | Spring—Main spring and barrel |
| 33368 | Turntable—Complete with black cover |
| 13862 | Weight—Governor weight and spring |

| Stock No. | Description |
|---|---|
| | **MODEL O-16** |
| 34509 | Arm—Tone arm—less sound box |
| 33373 | Bearing—One set governor shaft bearings |
| 30088 | Brake—Turntable brake complete |
| 33371 | Cap—Turntable spindle cap |
| 30090 | Cover—Hinged cover for needle cup |
| 30091 | Cup—Needle cup |
| 30092 | Escutcheon—Speed regulator escutcheon |
| 33366 | Gear—Intermediate drive gear and shaft |
| 13858 | Gear—Worm gear—located on winding shaft |
| 13859 | Gear—Winding gear—located on spring barrel |
| 13857 | Governor—Complete |
| 30093 | Indicator—Speed regulator arm and pointer |
| 34510 | Key—Winding key |
| 13854 | Motor—Complete |
| 13865 | Screw—Needle screw |
| 13860 | Shaft—Winding shaft and socket—less gear |
| 33372 | Sleeve—Rubber drive sleeve and damper plate |
| 30095 | Sound Box |
| 33367 | Spindle—Turntable spindle shaft and gear |
| 13851 | Spring—Brake spring |
| 13835 | Spring—Main spring and barrel |
| 34511 | Turntable—Complete with brown cover |
| 13862 | Weight—Governor weight and spring |
| 35925 | Support—Lid support |

# MODELS QB2 and QB6

Chassis No. RC-529 RC-529D

## CV-112 CONVERTER

## Six-Tube, Five-Band, Battery-Operated, Superheterodyne Receivers

### Electrical and Mechanical Specifications

**FREQUENCY RANGES**

Standard Broadcast ("A" Band)..... 540-1,720 kc (555-174 m)
Medium Wave ("B" Band)..... 3.0-9.5 mc (100-31.5 m)
Short Wave..... 9.5-11.7 mc (31.5-25.6 m)
Short Wave..... 11.7-15.1 mc (25.6-19.9 m)
Short Wave..... 15.1-22.5 mc (19.9-13.3 m)

**INTERMEDIATE FREQUENCY**..... 455 kc

**RCA TUBE COMPLEMENT**

(1) RCA-1R5..... 1st Det.,—Osc.
(2) RCA-1N5-GT..... 1st I-F Amplifier
(3) RCA-1N5-GT..... 2nd I-F Amplifier
(4) RCA-1H5-GT..... 2nd Det., A-F, and A.V.C.
(5) RCA-1A5-G..... Audio Driver Amplifier
(6) RCA-1G6-G..... Power Output

**BATTERIES REQUIRED**

1—1.5 volt "A" Battery; 2—45 volt "B" Batteries

**CURRENT CONSUMPTION**

"A" 0.35 amperes
"B" 12.6 milliamperes

**A. C. POWER SUPPLY RATING**

Using CV-112, A.C. power supply unit
Supply Voltages 105-125 or 210-250 volts; 50-60 cycles
Power consumption at nominal supply voltages 15 watts
"B" current drain..... 13.5 milliamperes at 90 volts dc output
"A" current drain.....0.35 amperes at 1.4 volts dc output

**POWER OUTPUT**

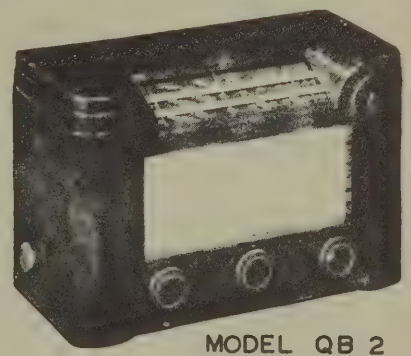
Undistorted..... 0.55 watts
Maximum..... 0.65 watts

**LOUDSPEAKER (RL-92-2)**

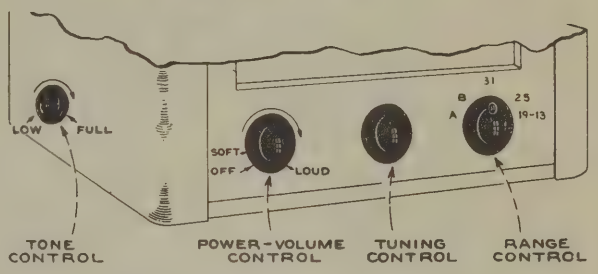
Type..... 6 inch permanent-magnet dynamic
Voice Coil Impedance..... 3.4 ohms at 400 cycles

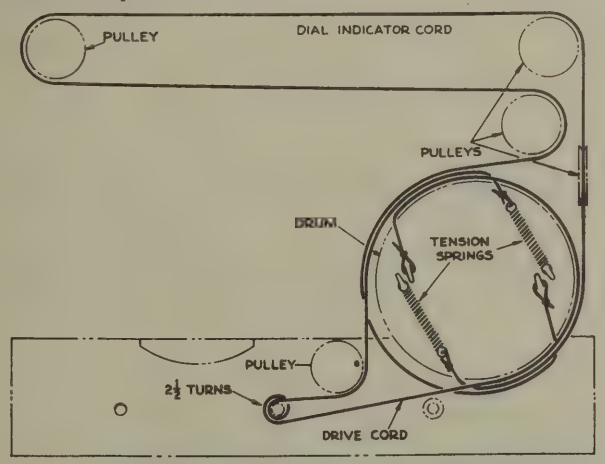
| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS ..... | 10⅝ in. | 15¾ in. | 7⅝ in. |

Net Weight..... 17 lbs.
Tuning Drive Ratio..... 25:1



MODEL QB 2




## A-C Power Supply

Model CV-112 is a separate power supply unit. It is used to provide operating voltages for Model QB2 from an a-c supply source. Power ratings for the CV-112 are listed above.

**Precautionary Lead Dress:**

1. All leads between antenna coil and switch must be as short as possible and kept away from the oscillator coil leads and switches.
2. Tap on 19-13 meter oscillator coil to pin No. 6 on oscillator tube socket must be dressed as far away from the air trimmer as possible.
3. All oscillator coil leads must be kept apart from each other, as well as other leads and parts.
4. Oscillator grid coupling condenser must bear against parts on S3, and be kept away from the shield between S2 and S3.
5. Check for correct bias cell polarity. Do not shunt with voltmeter.
6. The speaker leads must be kept from the volume control and associated parts and leads.
7. The two paper condensers on the sides of the 2nd I-F transformers must be held close to chassis to reduce interstage coupling.

## QB2, QB6

### I-F or A-F Transformer Breakdown:

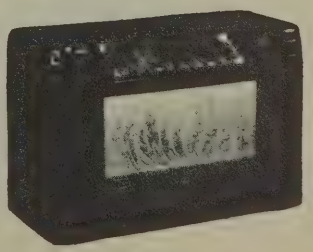
In 2nd production, a 10-megohm, ½-watt resistor is connected across the +B circuit electrolytic capacitor to discharge the capacitor when the set is tuned "off." This eliminates any voltage difference (retained by capacitor) between the chassis and I-F and A-F transformer primaries while the set is "off" and therefore reduces transformer breakdown due to electrolysis in humid climates.

## QB6 (RC-529D)

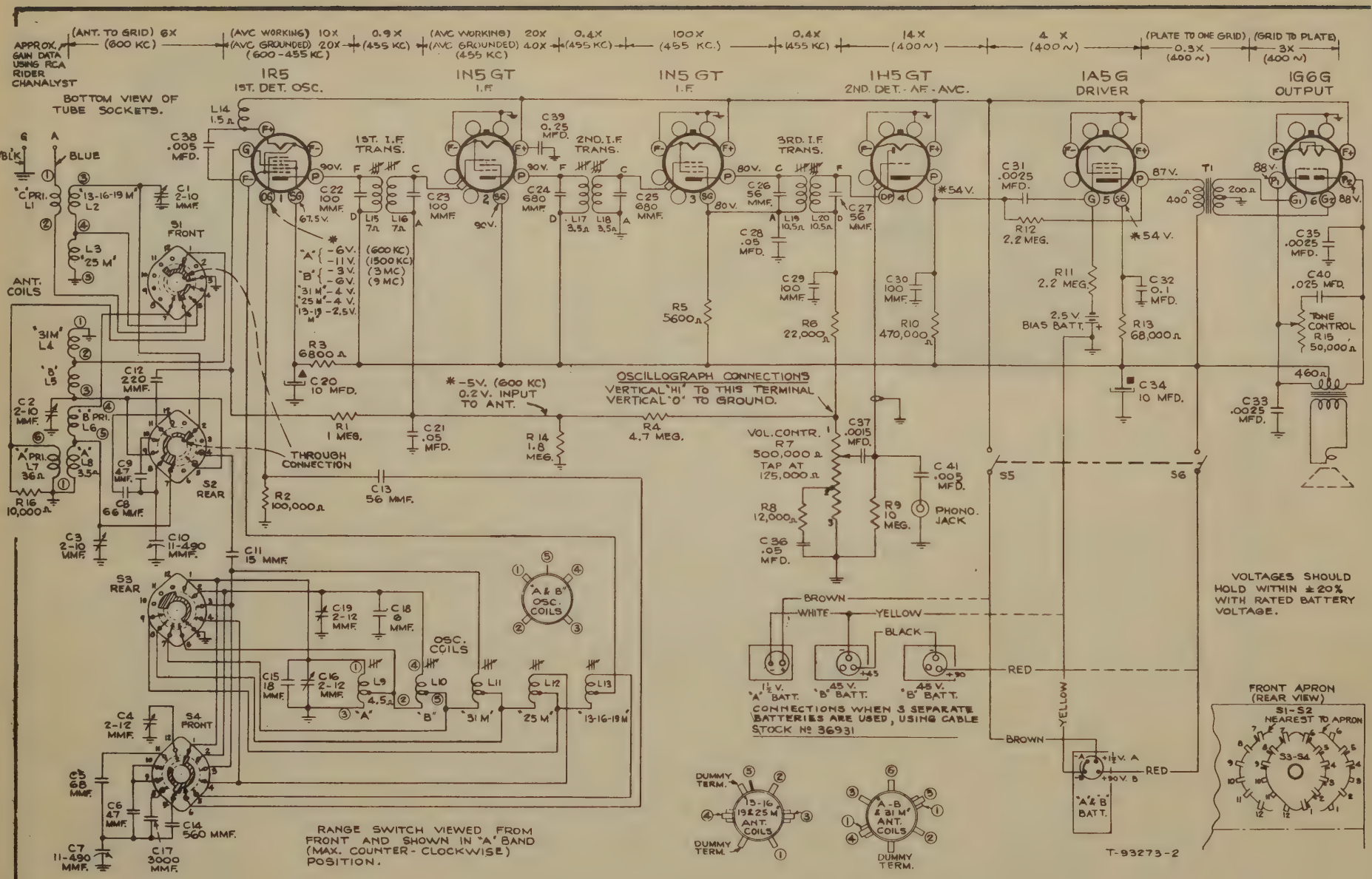
### Service Data:

Model QB6 is essential the same as Model QB2, except for the following parts which are used in the QB6:

| Stock No. | |
|---|---|
| 37976 | Bracket—Tone control support bracket ..... |
| 37999 | Dial—Glass dial scale..... |
| 36103 | Decal—Power-volume decal.. |
| 37839 | Decal—Range switch decal.. |
| 35392 | Decal—Trade mark decal... |
| 35391 | Decal—Tuning decal..... |
| 37838 | Frame—Dial frame complete, less dial and pointer..... |
| 35650 | Knob—Tone control knob.. |
| 34861 | Knob—Tuning knob..... |
| 34862 | Knob—Vol. control or range switch knob..... |



*Model QB6.*


APPROX. GAIN DATA USING RCA RIDER CHANALYST
(ANT. TO GRID) 6X (600 KC)
(AVC WORKING) 10X (AVC GROUNDED) 20X (600-455 KC)
0.9X (455 KC)
(AVC WORKING) 20X (AVC GROUNDED) 40X (455 KC)
0.4X (455 KC)
100X (455 KC.)
0.4X (455 KC)
14X (400 ~)
4 X (400 ~)
(PLATE TO ONE GRID) 0.3X (400 ~)
(GRID TO PLATE) 3X (400 ~)
1R5 1ST. DET. OSC.
1N5 GT I.F.
1N5 GT I.F.
1H5 GT 2ND. DET. - AF - AVC.
1A5 G DRIVER
1G6 G OUTPUT
BOTTOM VIEW OF TUBE SOCKETS.
ANT. COILS
1ST. I.F. TRANS.
2ND. I.F. TRANS.
3RD. I.F. TRANS.
OSCILLOGRAPH CONNECTIONS
VERTICAL 'HI' TO THIS TERMINAL
VERTICAL 'O' TO GROUND.
*-5V. (600 KC) 0.2V. INPUT TO ANT.
THROUGH CONNECTION
VOL. CONTR. R7 500,000Ω TAP AT 125,000Ω
TONE CONTROL R15 50,000Ω
2.5 V. BIAS BATT.
PHONO. JACK
S1 FRONT
S2 REAR
S3 REAR
S4 FRONT
S5
S6
A & B OSC. COILS
OSC. COILS
DUMMY TERM.
13-16-19 & 25 M ANT. COILS
A-B & 31 M ANT. COILS
BROWN
WHITE
YELLOW
BLACK
RED
1½ V. 'A' BATT.
45 V. 'B' BATT.
45 V. 'B' BATT.
CONNECTIONS WHEN 3 SEPARATE BATTERIES ARE USED, USING CABLE STOCK Nº 36931
VOLTAGES SHOULD HOLD WITHIN ±20% WITH RATED BATTERY VOLTAGE.
FRONT APRON (REAR VIEW)
S1-S2 NEAREST TO APRON
S3-S4
'A' & 'B' BATT.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN 'A' BAND (MAX. COUNTER-CLOCKWISE) POSITION.
T-93273-2

On some models R5 is 4,700 ohms.

*Schematic Circuit Diagram*

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

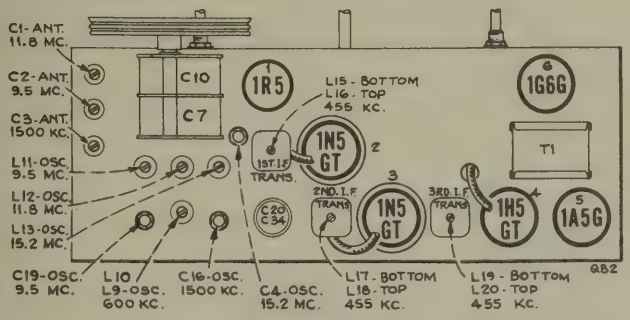
**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.




*Tube and Trimmer Locations*

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of the test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

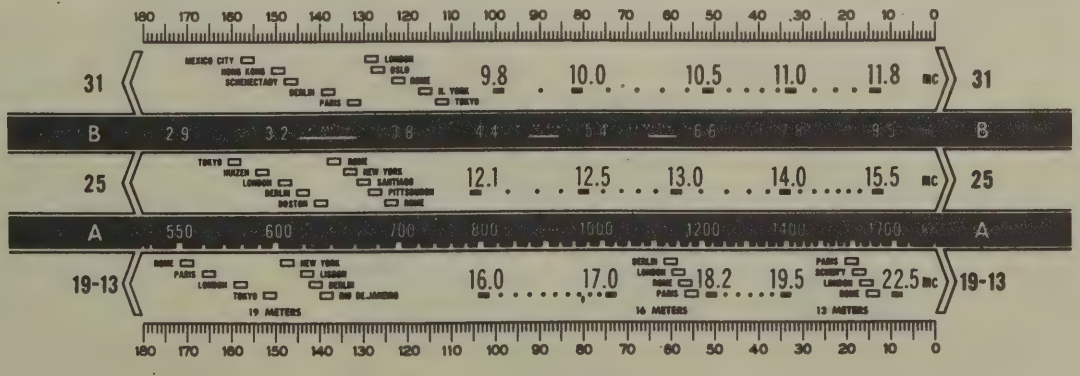
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 1N5GT—2nd I-F grid cap, in series with .01 mfd. | 455 kc | A | Quiet point near 180° | L20, L19 3rd I-F transformer |
| 2 | 1N5GT—1st I-F grid cap, in series with .01 mfd. | | | | L18, L17 2nd I-F transformer |
| 3 | 1R5—1st Det. grid, in series with .01 mfd. | | | | L16, L15 1st I-F transformer |
| 4 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L12 (osc.) C1 (ant.) |
| 5 | | 15.2 mc | | 17° | C4 (osc.)* |
| 6 | | Repeat steps 4 and 5. | | | |
| 7 | | 15.2 mc | 19-13M | 156° | L13 (osc.)** |
| 8 | | 9.5 mc | 31M | 156° | L11 (osc.)** C2 (ant.) |
| 9 | | 9.5 mc | B | 11.5° | C19 (osc.)*** |
| 10 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C16 (osc.) C3 (ant.) |
| 11 | | 600 kc | | 150° | L9 (osc.) (Rock gang) |
| 12 | | Repeat steps 10 and 11. | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C2 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

** Peak at minimum position of plunger if two peaks can be obtained.

*** Peak at minimum capacity of two peaks can be obtained.

NOTE: Oscillator tracks above signal on all bands.




# Calibration Scale

*Reduced Reproduction of Receiver Dial and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 150° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

# CV-112 CONVERTER

## A-C Power Unit for QB2:

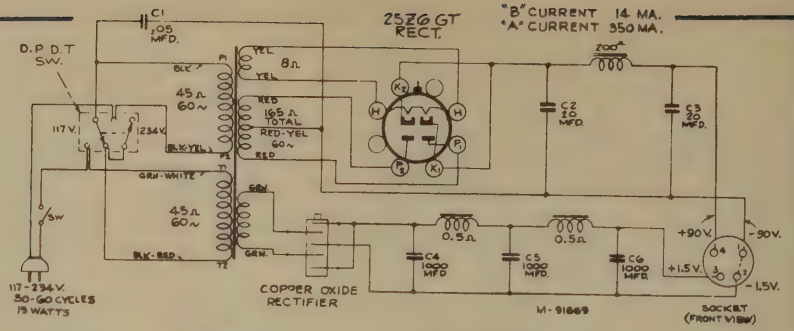
The CV-112 is designed to convert Model QB2 from battery to a-c operation.

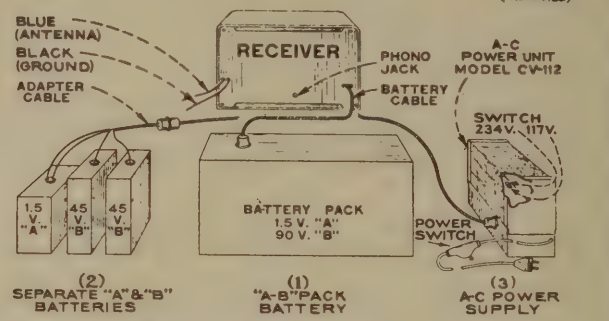
### Reactivating Rectifier:

The "A" supply in the CV-112 power unit (used in Model QB2) is supplied through a copper-oxide dry-disc rectifier. If the radio ceases to operate or drops off in performance, it may be due to a chemical change in this rectifier, which causes the "A" voltage to drop low enough to affect the performance of the receiver. The normal "A" voltage is 1.5 volts.

This condition is more likely to occur in the rectifier when the power unit has been out of service for a long time (four months or more).

To reactivate the rectifier it is only necessary to short the "A" plus and "A" minus terminals of the socket by connecting them together with a piece of wire for a period of FOUR MINUTES. The high temperature developed in the rectifier during this period has the tendency to restore the discs to their normal rectifying ability.




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-529)** |
| 35642 | Calibrator—Drive drum calibrator |
| 12714 | Capacitor—Air trimmer—medium |
| 33790 | Capacitor—Electrolytic comprising two sections of 10 mfd., 150 volt each |
| 34654 | Capacitor—Mica trimmer comprising 3 sections of 2.5—10 mmfd. |
| 35646 | Capacitor—6 mmfd. |
| 36012 | Capacitor—15 mmfd. |
| 31350 | Capacitor—18 mmfd. |
| 13141 | Capacitor—47 mmfd., silver mica |
| 35644 | Capacitor—47 mmfd. ceramic |
| 30949 | Capacitor—56 mmfd., mica |
| 12723 | Capacitor—56 mmfd., moulded |
| 36072 | Capacitor—66 mmfd. |
| 35645 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 30904 | Capacitor—100 mmfd., mica |
| 12694 | Capacitor—220 mmfd. |
| 31433 | Capacitor—560 mmfd. |
| 36174 | Capacitor—680 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 33806 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 31581 | Cell—Bias cell |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 36071 | Coil—Choke coil |
| 36065 | Coil—Oscillator coil—A and B bands |
| 36066 | Coil—Oscillator coil—13-19 meter bands |
| 36067 | Coil—Oscillator coil—25 meter band |
| 36068 | Coil—Oscillator coil—31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 36063 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 28 in.) |
| 34662 | Cord—Indicator drive cord (approx. 77 in.) |
| 35788 | Core—Adjustable core and stud for A and B band oscillator coil |
| 31259 | Core—Adjustable core and stud for 13-19 meter, 25 meter, and 31 meter bands oscillator coils. |
| 35627 | Drum—Drive drum less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 34499 | Holder—Bias cell holder |
| 5119 | Plug—3 contact female plug for speaker cable |
| 30568 | Plug—4 prong male plug for battery cable |
| 35641 | Pulley—Drive cord pulley |
| 35630 | Pulley—Drive cord pulley located between the range switch shaft and the tuning shaft |
| 30146 | Resistor—4,700 ohm, ½ watt |
| 12265 | Resistor—6,800 ohm, ½ watt |
| 14559 | Resistor—10,000 ohm, ½ watt |
| 30128 | Resistor—12,000 ohm, ½ watt |
| 13998 | Resistor—22,000 ohm, ½ watt |
| 13715 | Resistor—68,000 ohm, ½ watt |
| 14560 | Resistor—100,000 ohm, ½ watt |
| 12285 | Resistor—470,000 ohm, ½ watt |
| 13730 | Resistor—1 megohm, ½ watt |
| 5028 | Resistor—1.8 megohm, ½ watt |
| 12679 | Resistor—2.2 megohm, ½ watt |
| 30271 | Resistor—4.7 megohm, ½ watt |

| STOCK No. | DESCRIPTION |
|---|---|
| 13601 | Resistor—10 megohm, ½ watt |
| 14350 | Screw No. 8-32 square head set screw for drum |
| 35633 | Shaft—Range switch slip-on indicator shaft |
| 35637 | Shaft—Tuning shaft |
| 35787 | Socket—Phono input socket |
| 36069 | Socket—1R5 tube socket and ring |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Drive cord spring |
| 31418 | Spring—Indicator cord spring |
| 35640 | Support—Drive cord pulley support with one pulley |
| 35639 | Support—Drive cord pulley support with two pulleys |
| 35622 | Support—Tuning shaft and flywheel support |
| 36064 | Switch—Range switch |
| 36062 | Switch—Tone switch |
| 36061 | Transformer—Driver transformer |
| 35636 | Transformer—First I.F. transformer |
| 36070 | Transformer—Second I.F. transformer |
| 35628 | Transformer—Third I.F. transformer |
| 33726 | Washer—"C" washer for pulley |
| 2917 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL92-2)** |
| 32907 | Cap—Dust cap |
| 36077 | Cone—Cone complete with voice coil |
| 5118 | Plug—3 prong male plug for speaker |
| 35941 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35649 | Back—Cabinet back cover |
| 35389 | Decalcomania—Range marker decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning marker decal |
| 36103 | Decalcomania—Volume control decal |
| 35712 | Dial—Glass dial scale |
| 35647 | Frame—Dial frame complete less dial and pointer |
| 35648 | Indicator—Station selector indicator |
| 35652 | Knob—Band indicator knob |
| 35651 | Knob—Range switch knob |
| 35650 | Knob—Tone switch knob |
| 36073 | Knob—Volume control and power switch knob |
| 35653 | Mounting—Complete set of hardware to mount speaker |
| 4982 | Spring—Retaining spring for knob Stock No. 35652 |
| 14270 | Spring—Retaining spring for knob Stock No. 35650, 35651, 36073 |
| | **CV112 POWER UNIT** |
| 4886 | Capacitor—.05 mfd.—400 volts (C1) |
| 30873 | Capacitor—Electrolytic, 2 sections, 20 mfd., 150 volts |
| 36553 | Capacitor—Electrolytic, 1,000 mfd., 3 volts |
| 36547 | Coil—High voltage choke coil—200 ohms |
| 36548 | Coil—Low voltage choke coil—marked 1B84 |
| 36549 | Coil—Low voltage choke coil—marked 1B85 |
| 36551 | Rectifier—1.5 volt rectifier |
| 36552 | Socket—4-contact power output socket |
| 18008 | Socket—Tube socket |
| 36550 | Switch—Power cord switch |
| 33491 | Switch—Voltage change switch |
| 36546 | Transformer—Power transformer—110-220 volts, 50-60 cycle |

# MODELS QU2C, QU2M, Q22, QK23, Q25 and Q27

**Chassis No. RC-507C RC-507D RC-507, RC-507B RC-507A (RC-507K)**

## Six-Tube, Five-Band, A-C, Superheterodyne Receivers and Radio-Phonographs

### Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" band) | 540-1,720 kc (556-174 m) |
| Medium Wave ("B" band) | 3.0-9.5 mc (100-31.6 m) |
| "31" Meter Spread Band | 9.5-11.7 mc (31.6-25.6 m) |
| "25" Meter Spread Band | 11.7-15.1 mc (25.6-19.9 m) |
| "19-13" Meter Spread Band | 15.1-22.5 mc (19.9-13.3 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

POWER SUPPLY RATING QU 2

Rating "C" ...105-125, 200-250 volts, 50-60 cycles, 80 watts total

POWER SUPPLY RATINGS Q22, QK23 & Q25

| Symbol | Voltages | Frequency (cycles) | Watts |
|---|---|---|---|
| Rating A | 105-125 | 50-60 | 65 |
| Rating B | 105-125 | 25-60 | 65 |
| Rating C | 105-125, 200-250 | 50-60 | 65 |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SA7 | 1st Detector-Oscillator |
| (2) RCA-6SK7 | I-F Amplifier |
| (3) RCA-6SQ7 | 2nd Detector, A-F Amplifier, A.V.C. |
| (4) RCA-6AD7-G | Phase-Inverter, Power Output |
| (5) RCA-6F6-G | Power Output |
| (6) RCA-5Y3-G | Rectifier |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 3 watts |
| Maximum | 3.5 watts |

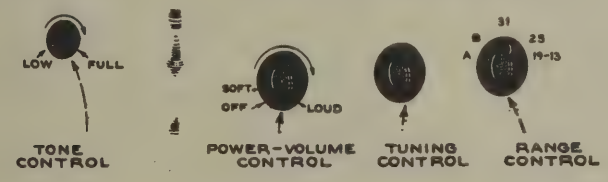
PHONOGRAPH MOTOR—Self-starting, constant-speed, induction type.

CRYSTAL PICKUP (QU2C)

| | |
|---|---|
| Impedance | 100,000 ohms at 1,000 c.p.s. |
| Average Output | 1.5 volts at 1,000 c.p.s. across 500,000 ohm load |

MAGNETIC PICKUP (QU2M)

| | |
|---|---|
| Impedance | 96 ohms at 1,000 c.p.s. |
| Average Output | 0.14 volts at 400 c.p.s. across open circuit |




*Location of Controls*

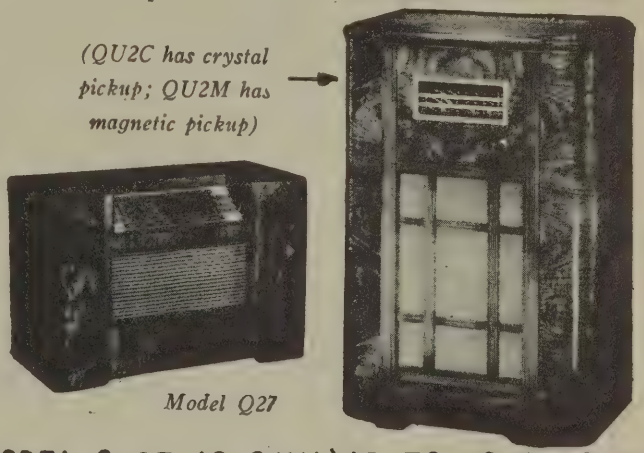
LOUDSPEAKER (RL-70M1) QU 2C QU 2M

| | |
|---|---|
| Type | 12-inch Electrodynamic |
| V-C Impedance at 400 c.p.s. | 2.2 ohms |

LOUDSPEAKER

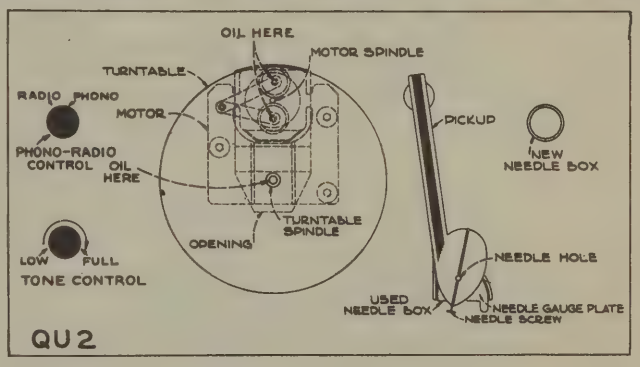
| | Q22 | QK23 | Q25 |
|---|---|---|---|
| Model | RL-79A6 | RL-70J3 | RL-63K5 |
| Type (Electrodynamic) | 6-inch | 12-inch | 8-inch |
| V-C. Impedance at 400 c.p.s. | 2.2 ohms | 2.2 ohms | 2.2 ohms |

*(QU2C has crystal pickup; QU2M has magnetic pickup)*



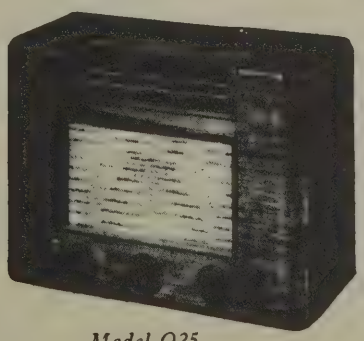
*Model Q27*

**MODEL Q-27 IS SIMILAR TO MODEL Q-25**

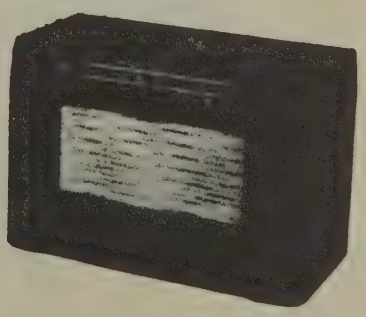



*Motorboard and Controls*

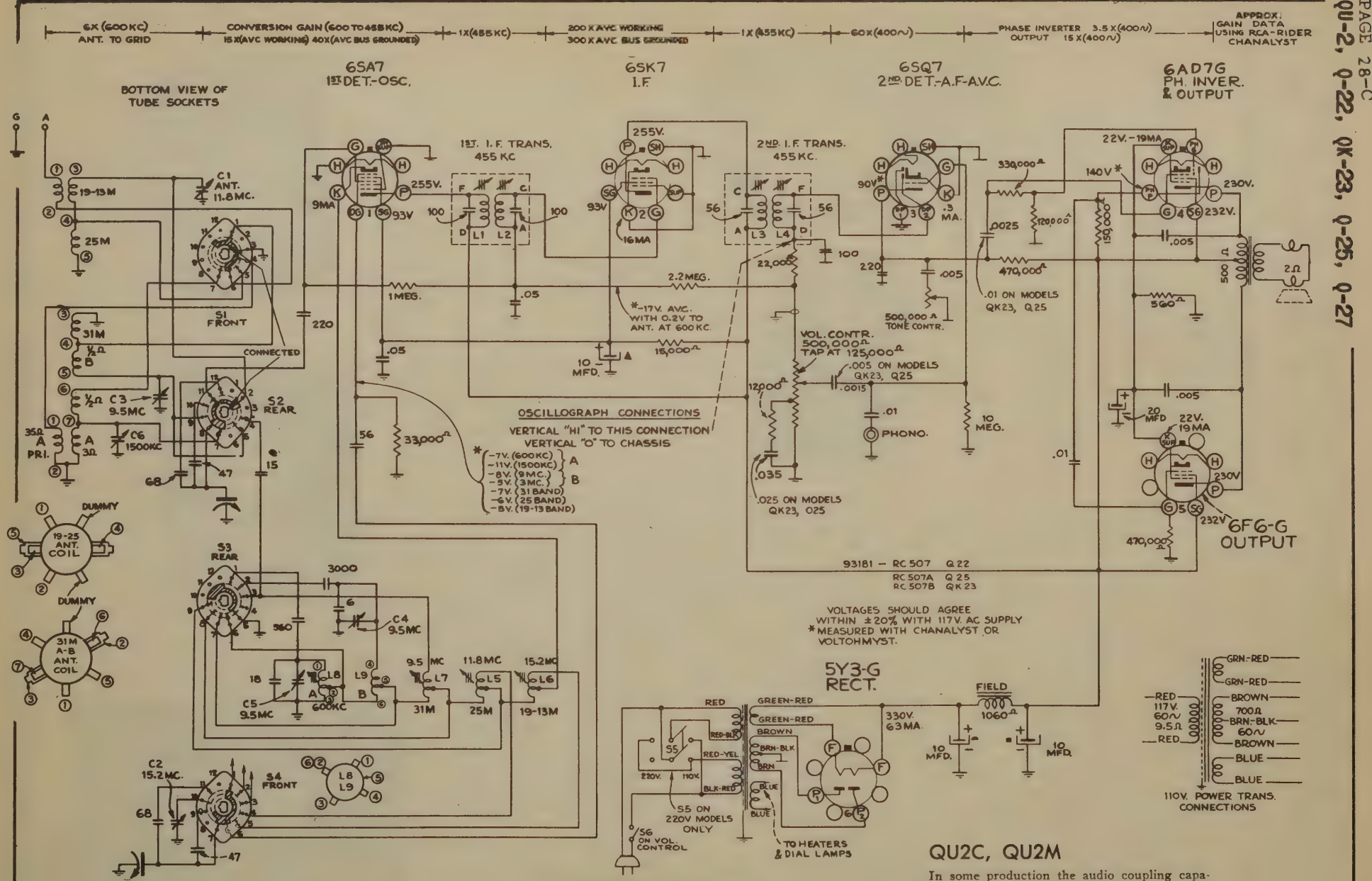
*Model QK23*



*Model Q25*



*Model Q22*




*Schematic Circuit Diagram*

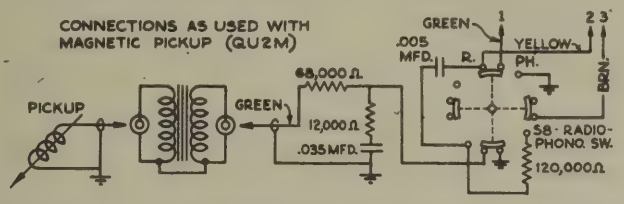
## MODELS Q22, QK23, Q25, Q27

### QU2C, QU2M

In some production the audio coupling capacitor is changed from .0025 mfd. to .01 mfd. Also, in the QU2-M magnetic pickup connection, the .035 mfd. capacitor is changed to .05 mfd.

## Phonograph Information

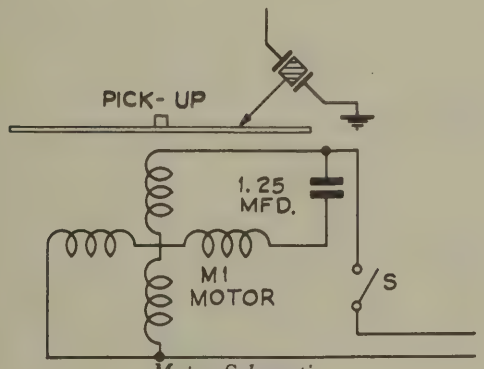
The QU2M is equipped with a magnetic pickup, and the QU2C with a crystal pickup. The output of the crystal pickup is fed into the audio end of the receiver through a switch and compensating circuit. On instruments using a magnetic pickup, a transformer and compensating circuit are used between the pickup and the audio input (see schematic diagram). The transformer has two jacks, the larger one (primary) for input from the pickup and the smaller one (secondary) for output to the compensating circuit. The components of the compensating circuit are mounted externally to the chassis on a terminal board in the cabinet.



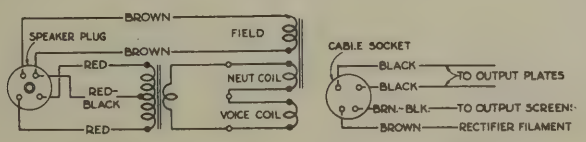

*Schematic Showing Magnetic Pickup Connections (QU2M)*

**The phonograph motor has its bearing filled with oil and sealed at the factory and hence should not require lubrication in the field. However the two rubber tired idler pulleys should have their bearings lubricated occasionally with S.A.E. 10 oil. Care should be taken not to get any oil, grease, or other foreign matter on the rubber tires. These tires and the motor spindle should be cleaned occasionally with quick drying naphtha.**

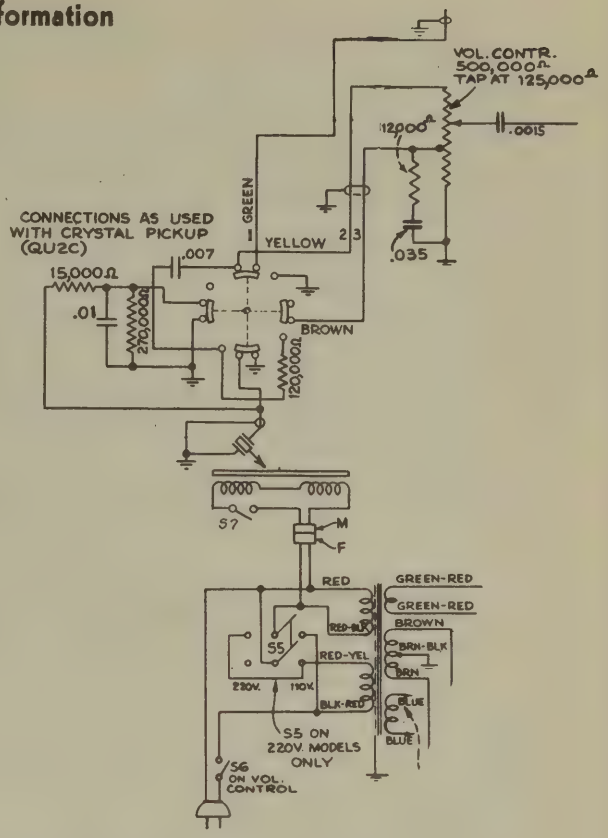
**The turntable spindle bearing should also be lubricated occasionally with S.A.E. 10 oil.**




*Motor Schematic*

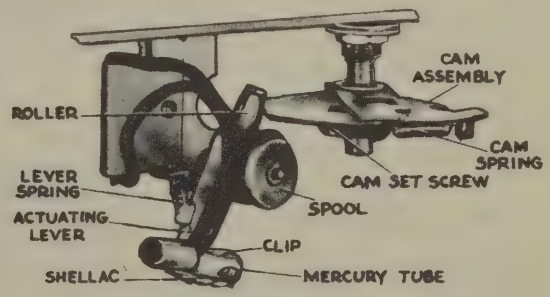



*Connections and Colors of Loudspeaker and Cable*

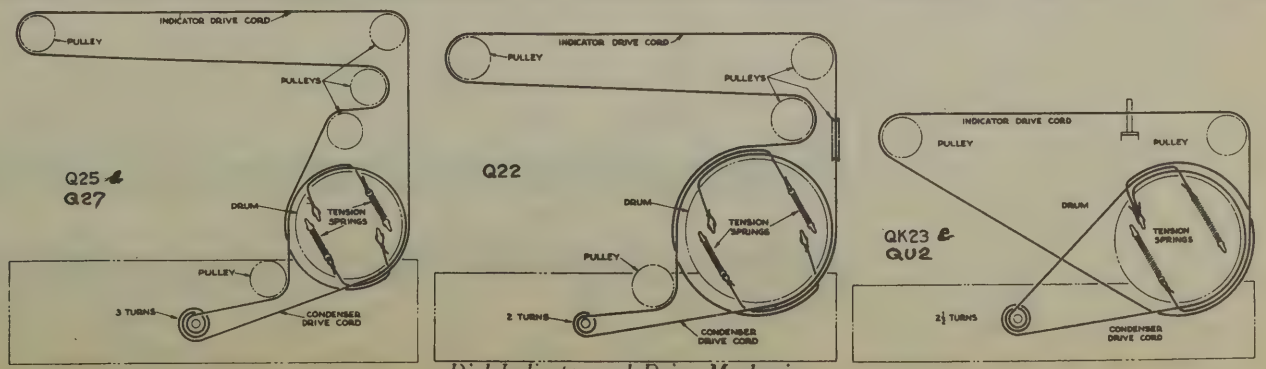



*Schematic Circuit Diagram with Crystal Pickup (QU2C)*

**The motor switch** is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1⅞ inches from the center line of the spindle shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.




**MERCURY SWITCH MECHANISM**
(VIEWED FROM FRONT
SHOWN WITH PICKUP IN REST POSITION)




*Dial-Indicator and Drive Mechanism*

## Alignment Procedure

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.** — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

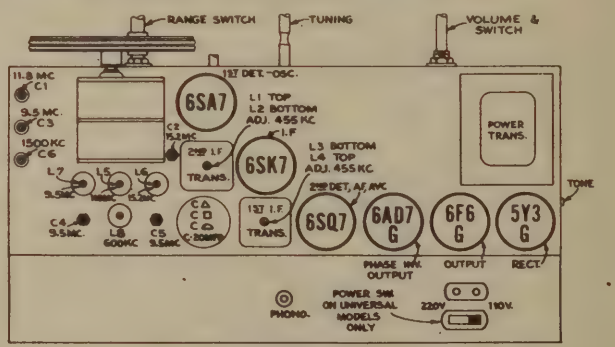
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 12C8 I-F grid in series with .01 mfd. | 455 kc | A | Quiet Point near 180° | L3 and L4 2nd I-F Trans. |
| 2 | 12SA7 1st Det. grid in series with .01 mfd. | | | | L1 and L2 1st I-F Trans. |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L5 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C2 (osc.)* |
| 5 | | Repeat steps 3 and 4 | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L6 (osc.)** |
| 7 | | 9.5 mc | 31M | 156° | L7 (osc.)** C3 (ant.) |
| 8 | | 9.5 mc | B | 11.5° | C4 (osc.)*** |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C5 (osc.) C6 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | | Repeat steps 9 and 10 | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C2 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

**Peak at minimum position of plunger if two peaks can be obtained.

***Peak at minimum capacity if two peaks can be obtained.

**NOTE:** Oscillator tracks above signal on all bands.



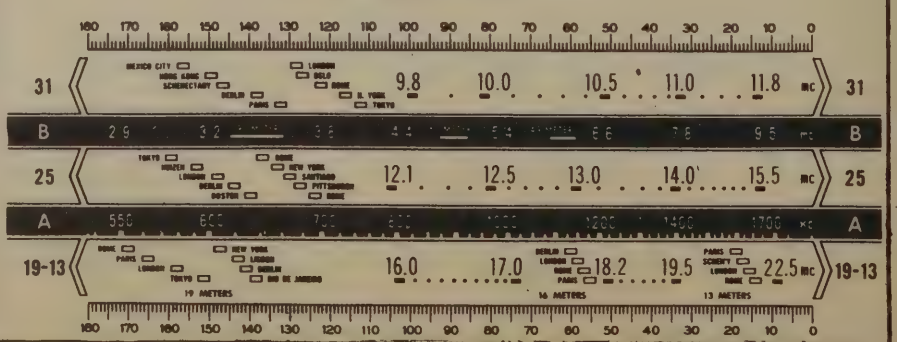

*Tube and Trimmer Location*

**Precautionary Lead Dress.—**

1. All leads between antenna coils and switch must be as short as possible and kept away from oscillator coil, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.
3. Blue plate lead of 2nd I-F should be dressed under other leads and against chassis.

## Calibration Scale

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*




## Q27 (RC-507K)

### Service Data:

Model Q27 is similar to Model Q25 which is described in the Service Note for Models Q22, QK23, and Q25. Replacement parts for Q27 are same as for Q25, with exception of the following parts used in Q27:

#### CHASSIS ASSEMBLIES (RC-507K)

37976 Bracket—Tone control mounting bracket
38409 Control—Tone control
38412 Control—Volume control and power switch
32634 Cord—Drive cord (approx. 29-in. overall length)
13988 Resistor—10 ohms, ½ watt
14350 Screw—No. 8-32 sq. head set screw for drive drum
35787 Socket—Phono input socket
31261 Spring—Retaining spring for adjustable cord and studs
38761 Support—L.H. pulley support complete with pulley
38762 Support—R.H. pulley support complete with 3 pulleys
35588 Transformer—Power transformer —105-120 volts, 25 cycle

#### SPEAKER ASSEMBLIES (92311-1)

38765 Coil—Field coil—1060 ohms
38766 Cone—Cone complete with voice coil
5039 Plug—4-prong male plug for speaker
38374 Transformer—Output transformer

#### MISCELLANEOUS ASSEMBLIES

35387 Decalcomania — Power — volume decal
37839 Decalcomania—Range switch decal
35391 Decalcomania—Tuning decal
35392 Decalcomania—Trade mark decal
38841 Dial—Glass dial scale
35953 Frame—Dial frame complete—less indicator pointer and dial scale.
35954 Indicator—Station selector indicator
35814 Knob—Range switch knob
35650 Knob—Tone control knob
35775 Knob—Tuning or volume control knob
11891 Lamp—Dial lamp
14270 Spring—Retaining spring for knob No. 35650
30900 Spring—Retaining spring for knobs No. 35775 and No. 35814

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** Model QU2C (RC-507C) Model QU2M (RC-507D) |
| 35622 | Bracket—Flywheel and shaft mounting bracket. |
| 12714 | Capacitor—Medium air trimmer (C2, C4, C5). |
| 34654 | Capacitor—Mica trimmer—comprising 3 sections (C1, C3, C6) |
| 35646 | Capacitor—6 mmfd. |
| 36012 | Capacitor—15 mmfd. |
| 31350 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 13141 | Capacitor—47 mmfd., moulded |
| 30949 | Capacitor—56 mmfd., mica (I-F) |
| 12723 | Capacitor—56 mmfd., moulded |
| 35645 | Capacitor—68 mmfd., ceramic |
| 13057 | Capacitor—68 mmfd., mica |
| 30904 | Capacitor—100 mmfd., mica (I-F) |
| 12720 | Capacitor—100 mmfd., moulded |
| 12694 | Capacitor—220 mmfd. |
| 31433 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 33640 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd—(Model QU2C) |
| 14393 | Capacitor—.01 mfd., 1,000 volts |
| 4870 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd.—(Model QU2M) |
| 32787 | Capacitor—.05 mfd. |
| 33014 | Capacitor—Electrolytic comprising 3 sections of 10 mfd. and one section of 20 mfd. |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—A and B bands |
| 35624 | Coil—Oscillator coil—19-13 meter band |
| 35625 | Coil—Oscillator coil—25 meter band |
| 35626 | Coil—Oscillator coil—31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 36035 | Control—Tone control |
| 35620 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35642 | Dial—Calibrator dial for drive drum |
| 35627 | Drum—Tuning condenser drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 35641 | Pulley—Indicator cord pulley |
| 30735 | Resistor—560 ohms, 1 watt |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 12695 | Resistor—15,000 ohms, ½ watt—(Model QU2C) |
| 35595 | Resistor—15,000 ohms, 3 watts |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt (Model QU2M) |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30493 | Resistor—150,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt (Model QU2C) |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35633 | Shaft—Range switch indicator knob shaft |
| 35637 | Shaft—Tuning shaft |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Drive cord spring |
| 31418 | Spring—Pointer cord spring |
| 36036 | Switch—Phono. switch |
| 35621 | Switch—Range switch |
| 32827 | Switch—Voltage change switch |
| 35636 | Transformer—First I-F transformer—less grid lead and clip |
| 35628 | Transformer—Second I-F transformer |
| 32852 | Transformer—Power transformer—105-120 and 200-240 volts, 50-60 cycle |
| | **CRYSTAL PICKUP AND ARM ASSEMBLIES MODEL QU2C** |
| 33906 | Arm—Pickup arm—shell only |
| 33908 | Base—Pickup support arm base and retainer |
| 33905 | Crystal—Pickup crystal cartridge |
| 33907 | Support—Pickup support arm complete—less base |
| | **MAGNETIC PICKUP AND ARM ASSEMBLIES MODEL QU2M** |
| 36929 | Arm—Pickup arm—less unit, cable and pivot arm |
| 36930 | Arm—Pivot arm and set screw |
| 14291 | Armature—Pickup armature |
| 14930 | Coil—Pickup coil |
| 14292 | Damper—Pickup armature damper |
| 32228 | Pickup Unit—Magnet coil, needle screw and armature assembled |
| 34300 | Screw—No. 6-32 x ¼ headless set screw for pick-up pivot arm |
| 3811 | Screw—Needle screw |
| | **MOTOR ASSEMBLIES** |
| 34416 | Arm—Drive wheel support arm (long) |
| 34415 | Arm—Idler wheel support arm (short) |
| 34516 | Armature—Motor armature complete |
| 34515 | Bushing—Motor mounting rubber bushings |
| 34365 | Capacitor—1.25 mfd., 60 cycle motor starting capacitor for motor, Stock No. 34412 |
| 34514 | Cover—Bakelite top end shell for motor |
| 34414 | Idler—Rubber tire idler or drive wheel |
| 34412 | Motor—105-125 volts, 60 cycle phono. motor—less pulleys, capacitor and motor cradle |
| 34418 | Plate—Motor support plate complete with turntable bearing |
| 14887 | Retainer—Idler wheel retainer spring |
| 34437 | Spindle—Turntable spindle |
| 34417 | Spring—Idler arm tension spring |
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 34419 | Base—Pickup arm mounting base (Model QU2C) |
| 34312 | Base—Pickup arm base (Model QU2M) |
| 32865 | Bracket—Switch bracket and terminal board |
| 34308 | Cam—Switch cam assembly with spring |
| 34007 | Lever—Switch actuating lever, roller and clip |
| 34309 | Mounting—Pickup arm base mounting (rubber grommet, washers and nuts) |
| 34311 | Ring—Retaining ring for pickup arm pivot shaft |
| 14195 | Screw—No. 10-32 x 5/16 set screw for switch cam hub |
| 34314 | Shaft—Pickup arm pivot shaft (Model QU2C). |
| 36177 | Shaft—Pickup arm pivot shaft (Model QU2M). |
| 34310 | Spool—Insulating spool for switch leads |
| 32868 | Spring—Switch lever spring |
| 32867 | Spring—Tension spring for switch cam |
| 32866 | Switch—Mercury tube and leads |
| 31608 | Washer—Retaining washer for switch lever |
| | **SPEAKER ASSEMBLIES (RL-70M1)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4 prong male plug for speaker |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 4288 | Cap—Male cap for crystal pickup cable connector—Model QU2C |
| 33909 | Cup—Used needle cup—Model QU2C |
| 33910 | Cup—Needle cup—Model QU2M |
| 36074 | Decalcomania—Radio-Phono. decal |
| 35388 | Decalcomania—Tone switch decal |
| 35467 | Decalcomania—Trade mark decal |
| 36040 | Dial—Glass dial scale |
| 36075 | Escutcheon—Dial scale escutcheon—less dial |
| 4286 | Ferrule—Ferrule and bushing for pickup cable connector—Model QU2C |
| 36037 | Frame—Dial frame complete—less dial scale and pointer |
| 30698 | Hinge—Cabinet lid hinge |
| 36039 | Indicator—Station selector indicator |
| 35652 | Knob—Band indicator knob |
| 36038 | Knob—Phono. switch or tone control knob |
| 35651 | Knob—Range switch knob |
| 35955 | Knob—Volume control or tuning knob |
| 11765 | Lamp—Dial lamp Mazda No. 51 |
| 33774 | Mounting—Speaker mounting hardware |
| 30870 | Plug—2 prong male plug for motor |
| 33960 | Plug—Phono. output plug for pickup—Model QU2M |
| 36394 | Rest—Rubber needle rest—Model QU2M |
| 30900 | Spring—Retaining spring for knob Stock No. 36038 |
| 14270 | Spring—Retaining spring for knobs Stock Nos. 35955 and 35651 |
| 4982 | Spring—Retaining spring for knob Stock No. 35652 |
| 34423 | Support—Lid support |
| 14609 | Transformer—Pickup transformer—Model QU2M |
| 34422 | Turntable—Turntable (9 in.) complete |
| 35578 | Welt—Cabinet lid welt |

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **Model Q22 (RC-507)<br>Model QK23 (RC-507B)<br>Model Q25 (RC-507A)** |
| 35640 | Bracket—Bracket with one (1) pulley for indicator cord—Model Q22 only |
| 35622 | Bracket—Flywheel and shaft mounting bracket |
| 35639 | Bracket—Long bracket with three pulleys for indicator cord—Model Q22 only |
| 35950 | Bracket—Pulley support complete with one pulley—Model Q25 only |
| 35951 | Bracket—Pulley support complete with four pulleys—Model Q25 only |
| 12714 | Capacitor—Medium air trimmer (C2, C4, C5) |
| 34654 | Capacitor—Mica trimmer—comprising 3 sections (C1, C3, C6) |
| 35646 | Capacitor—6 mmfd. |
| 36012 | Capacitor—15 mmfd., ceramic |
| 31350 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 13141 | Capacitor—47 mmfd., moulded |
| 30949 | Capacitor—56 mmfd., mica (I-F) |
| 12723 | Capacitor—56 mmfd., moulded |
| 35645 | Capacitor—68 mmfd., ceramic |
| 13057 | Capacitor—68 mmfd., mica |
| 30904 | Capacitor—100 mmfd., mica (I-F) |
| 12720 | Capacitor—100 mmfd., moulded |
| 12694 | Capacitor—220 mmfd. |
| 31433 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 33806 | Capacitor—.0015 mfd. |
| 5107 | Capacitor—.0025 mfd. |
| 4838 | Capacitor—.005 mfd. 1,000 volts |
| 33584 | Capacitor—.005 mfd., 1,200 volts |
| 14393 | Capacitor—.01 mfd., 1,000 volts |
| 4937 | Capacitor—.01 mfd., 1,000 volts |
| 4870 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 33014 | Capacitor—Electrolytic comprising three sections of 10 mfd. and one section of 20 mfd. |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—A and B bands |
| 35624 | Coil—Oscillator coil—19-13 meter band |
| 35625 | Coil—Oscillator coil—25 meter band |
| 35626 | Coil—Oscillator coil—31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 35629 | Control—Tone control—Models Q22 and QK23 only |
| 35952 | Control—Tone control—Model Q25 only |
| 35620 | Control—Volume control and power switch—Models Q22 and QK23 |
| 35946 | Control—Volume control and power switch—Model Q25 only |
| 34662 | Cord—Indicator drive cord |
| 35788 | Core—Adjusting core and stud for "A" and "B" band oscillator coil—Model Q25 only |
| 31259 | Core—Adjusting core and stud for 19-13 meter, 25 meter and 31 meter oscillator coils—Model Q25 only |
| 35642 | Dial—Calibrator dial for drive drum—Models Q22 and QK23 |
| 35627 | Drum—Tuning condenser drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 5040 | Plug—4-contact female plug for speaker cable |
| 35641 | Pulley—Indicator cord pulley |
| 35630 | Pulley—Pulley operating between the tuning shaft and drive drum—Models Q22 and Q25 |
| 30735 | Resistor—560, ohms, 1 watt |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watts |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30493 | Resistor—150,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35633 | Shaft—Range switch indicator knob shaft—Models Q22 and QK23 |
| 35949 | Shaft—Tuning shaft—Model Q25 |
| 35637 | Shaft—Tuning shaft—Models Q22 and QK23 |
| 35948 | Shaft—Range switch indicator knob shaft—Model Q25 |

| STOCK No. | DESCRIPTION |
|---|---|
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 14278 | Socket—Phono. input socket |
| 13638 | Spring—Drive cord spring |
| 31418 | Spring—Pointer cord spring |
| 35621 | Switch—Range switch—Models Q22 and QK23 |
| 35947 | Switch—Range switch—Model Q25 |
| 32827 | Switch—Voltage change switch |
| 35636 | Transformer—First I-F transformer—less grid lead and clip |
| 35628 | Transformer—Second I-F transformer |
| 32910 | Transformer—Power transformer—110 volts, 25 cycle |
| 32852 | Transformer—Power transformer—105-120 and 200-240 volts, 50-60 cycle |
| 32911 | Transformer—Power transformer—110 volts, 60 cycle |
| 33726 | Washer—"C" washer for pulley Stock No. 35630—Models Q22 and Q25 |
| | **SPEAKER ASSEMBLIES<br>(RL-79A6)<br>Model Q22** |
| 35849 | Cap—Dust cap |
| 33966 | Coil—Field coil |
| 35441 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male plug for speaker |
| 35809 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES<br>(RL-70J3)<br>Model QK23** |
| 31825 | Cap—Dust cap |
| 12079 | Coil—Field coil |
| 11469 | Coil—Neutralizing coil |
| 31275 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male plug for speaker |
| 14534 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES<br>(RL-63K5)<br>Model Q25** |
| 31825 | Cap—Speaker cone center dust cap |
| 12079 | Coil—Field coil |
| 34615 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male plug for speaker |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36417 | Back—Back cover—Model Q25 |
| 35649 | Back—Back cover—Model Q22 |
| 35392 | Decalcomania—"RCA Victor" decal |
| 35654 | Dial—Glass dial scale—Model Q22 |
| 36040 | Dial—Glass dial scale—Model QK23 |
| 35956 | Dial—Glass dial scale—Model Q25 |
| 36075 | Escutcheon—Dial scale escutcheon—less dial—Model QK23 |
| 35647 | Frame—Dial frame complete—less pointer and dial—Model Q22 |
| 36037 | Frame—Dial frame complete—less dial scale and pointer—Model QK23 |
| 35953 | Frame—Dial frame complete—less dial scale and pointer—Model Q25 |
| 30698 | Hinge—Cabinet lid hinge—Model QK23 |
| 36039 | Indicator—Station selector indicator—Model QK23 |
| 35954 | Indicator—Station selector indicator—Model Q25 |
| 35648 | Indicator—Station selector indicator—Model Q22 |
| 35652 | Knob—Band indicator knob |
| 35651 | Knob—Range switch knob |
| 35650 | Knob—Tone control knob |
| 35955 | Knob—Volume control or tuning knob |
| 11891 | Lamp—Dial lamp—Models Q22 and Q25 Mazda No. 44 |
| 11765 | Lamp—Dial lamp—Model QK23—Mazda No. 51 |
| 35653 | Mounting—One set speaker mounting hardware—Model Q22 |
| 33774 | Mounting—Speaker mounting hardware—Model QK23 |
| 14270 | Spring—Retaining spring for knobs Stock Nos. 35650, 35955, 35651 |
| 4982 | Spring—Retaining spring for knob Stock No. 35652 |
| 34423 | Support—Lid support—Model QK23 |
| 35578 | Welt—Cabinet lid welt—Model QK23 |

# MODEL O-3

## Electric Motor Driven Portable

| | | |
|---|---|---|
| Height | 7 | inches |
| Width | 16¼ | inches |
| Depth | 13 | inches |

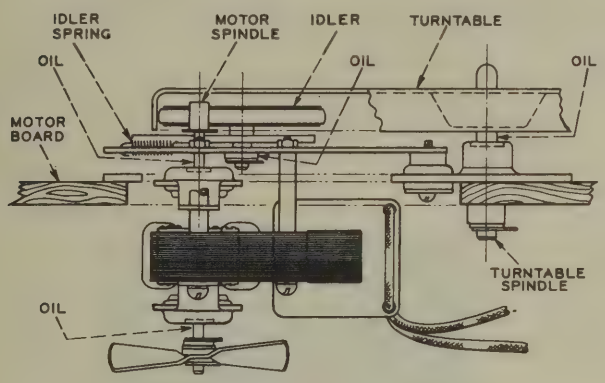
105-125 volts, 60 cycles constant speed motor

Turntable Rim Driven ..... 78 rpm.

Mechanical Reproducer

**Lubrication.**—Motor drive bearings should be lubricated with a good grade of oil at least twice a year.

**Caution.**—Keep all rubber drive parts free from oil.




0-3 PHONOGRAPH MOTOR

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **MOTOR ASSEMBLY** | | 33678 | Cover—Needle cup cover | |
| 39526 | Motor—Complete motor including mounting plate, spacers, screws, washers, and nuts | | 33680 | Cup—Needle cup | |
| 39530 | Plate—Idler wheel plate | | 36574 | Foot—Cabinet foot (glide) | |
| 39531 | Retainer—Retaining clip for turntable spindle | | 39753 | Handle—Carrying handle (black) | |
| 39533 | Retainer—Retaining clip for idler wheel | | 36577 | Hinge—Cabinet lid hinge | |
| 39528 | Spindle—Turntable spindle | | 33692 | Neck—Tone arm neck | |
| 39534 | Spring—Idler wheel tension spring | | 33690 | Screw—Screw and lockwasher to fasten neck on tone arm | |
| 39527 | Turntable | | 30368 | Sound Box | |
| 39532 | Washer—Fibre washer for turntable spindle | | 39522 | Spring—Conical spring to hold turntable | |
| 39529 | Wheel—Idler wheel and tire | | 33694 | Support—Cabinet lid support | |
| | | | 33684 | Support—Sound box support | |
| | **MISCELLANEOUS ASSEMBLIES** | | 33689 | Support—Taper tube support | |
| 33691 | Arm—Tone arm—less neck, base, washer, ring, screw and lockwasher | | 39523 | Switch—Motor switch | |
| | | | 33688 | Washer—Toné Arm Bearing washer and retaining snap ring | |

# MODEL QB3 and Power Units CV-110 and MI-8122

Chassis No. RC-539D

## Six-Tube and Magic Eye, Five-Band, Superheterodyne Receiver

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band).. 540-1,720 kc (556-174 m)
Medium Wave ("B" Band)..... 3.0-9.5 mc (100-31.6 m)
31 Meter Spread Band..... 9.5-11.7 mc (31.6-25.6 m)
25 Meter Spread Band..... 11.7-15.1 mc (25.6-19.9 m)
19-13 Meter Spread Band ..... 15.1-22.5 mc (19.9-13.3 m)

INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

(1) RCA-6S7..... R-F Amplifier
(2) RCA-6SA7..... 1st Detector—Oscillator
(3) RCA-6S7..... I-F Amplifier
(4) RCA-6T7-G..... 2nd Det. A-F Amplifier A.V.C.
(5) RCA-6W7-G..... Driver
(6) RCA-6Z7-G..... Power Output
(7) RCA-6N5..... Tuning Indicator

**Note.**—An RCA-5Y3-G rectifier is used in the CV-110 A-C power supply unit.

Dial Lamps (2)..... Mazda No. 47, 6.3 volts, 0.15 amp.

| POWER OUTPUT | CV-110 Unit | MI-8122 Unit |
|---|---|---|
| Undistorted | 1.3 watts | 2.0 watts |
| Maximum | 1.9 watts | 2.6 watts |

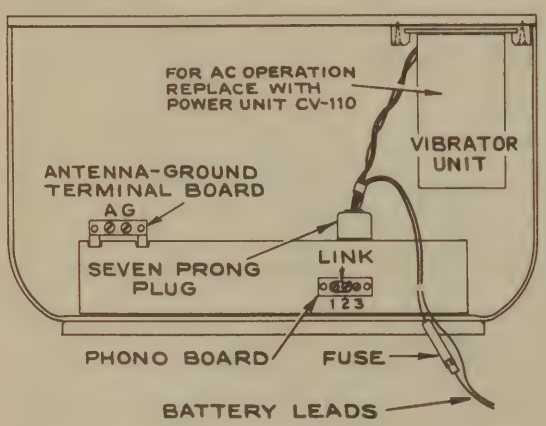
LOUDSPEAKER (RL-90-5)

Type..... 8-inch Permanent-Magnet Dynamic
V. C. Impedance..... 2.6 ohms at 400 cycles

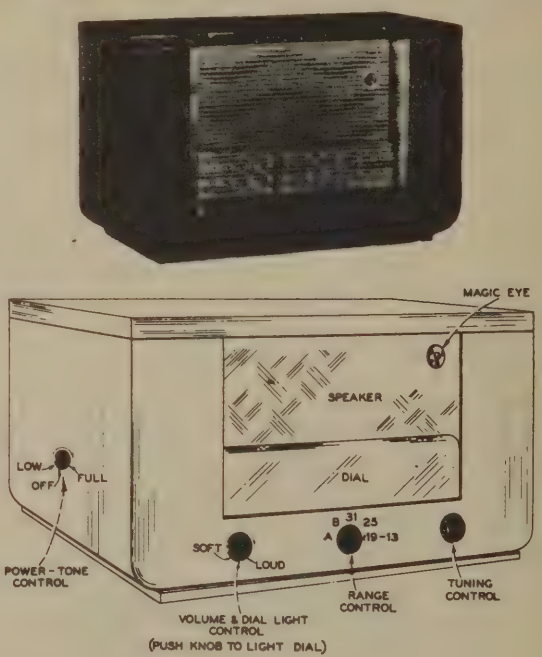
POWER SUPPLY RATING

D-C Rating (with vibrator-type power unit MI-8122)—
6.3 volts, 3.2 amps.
A-C Rating (with CV-110 A-C power supply unit)—
105-117, 117-130, 140-160, 200-225 volts, 25-60 cycles

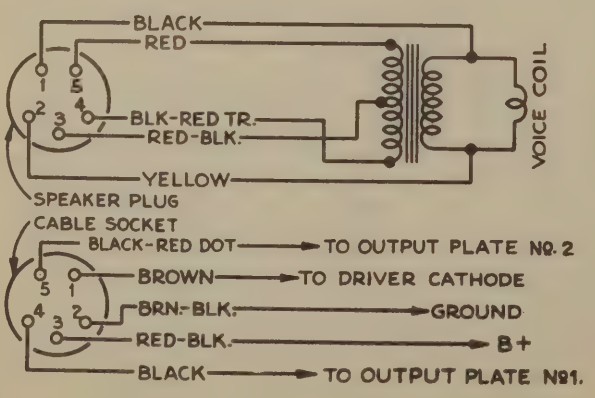
| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS (inches)..... | 13⅝ | 21½ | 10⁷⁄₁₆ |
| Chassis-Base Dimensions (inches).... | 2⅞ | 15⅝ | 6½ |
| Over-all Chassis Height (inches)..... | | | 8¼ |
| Net Weight..... | | | 40 lbs. |
| Tuning Drive Ratio..... | | | 28 to 1 |




*Back View*

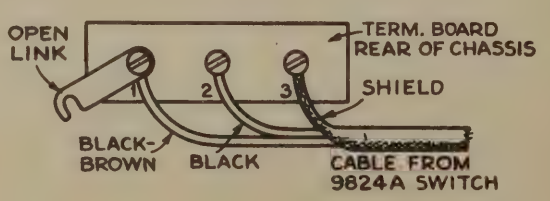



*Controls*

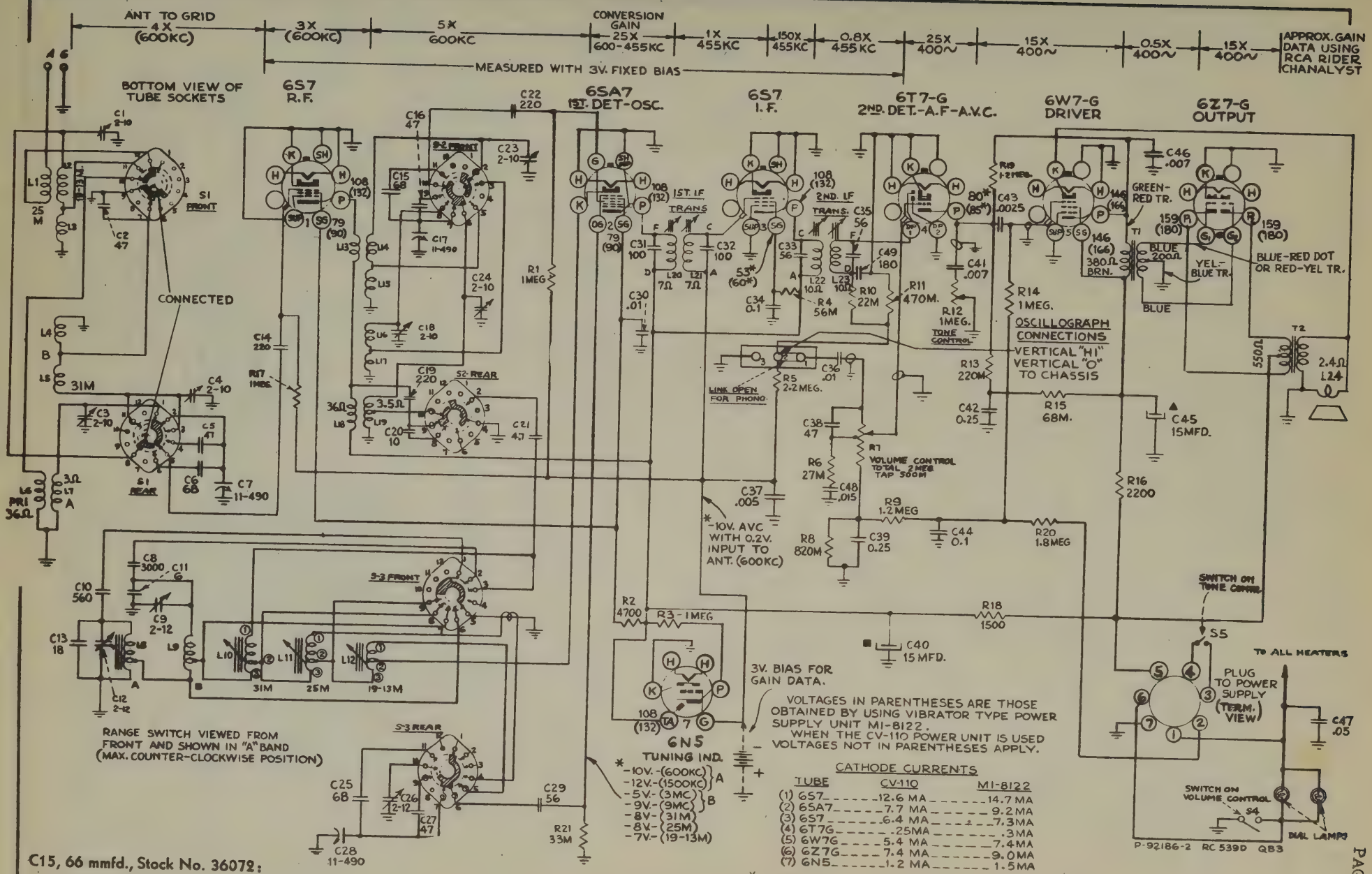



*Connections and Colors of Loudspeaker and Cable*

**Record Player Attachment.**—Terminals are provided on the rear of the chassis for convenient connection to a record player such as the RCA R-103-S. A Stock No. 9824A switch may be used to change from radio to record player. The connections of this switch are shown. In the event that a No. 9824A switch is not available, a double-pole double-throw toggle switch may be used.



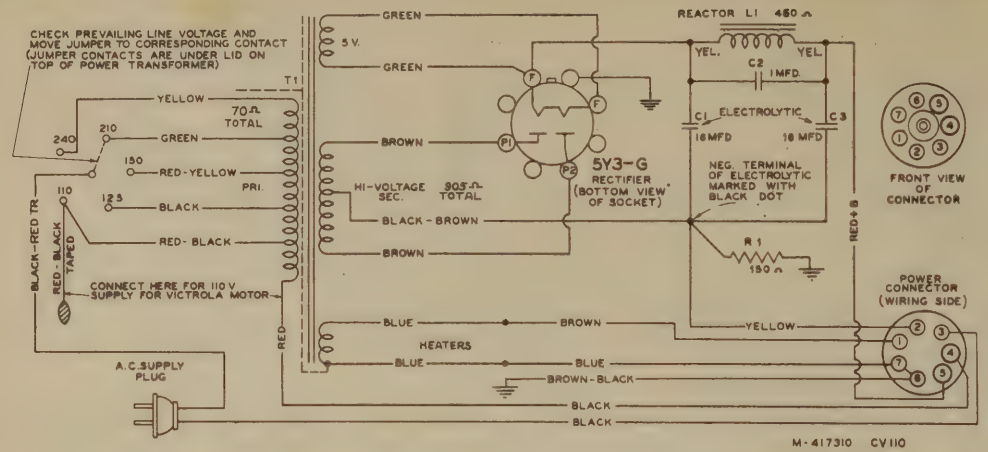

*Record Player Connections, Using Stock No. 9824A Switch Controls*


ANT TO GRID 4X (600KC)
3X (600KC)
5X 600KC
CONVERSION GAIN 25X 600-455KC
1X 455KC
150X 455KC
0.8X 455KC
25X 400~
15X 400~
0.5X 400~
15X 400~
APPROX. GAIN DATA USING RCA RIDER CHANALYST
MEASURED WITH 3V. FIXED BIAS
BOTTOM VIEW OF TUBE SOCKETS
6S7 R.F.
6SA7 1ST. DET-OSC.
6S7 I.F.
6T7-G 2ND. DET.-A.F.-A.V.C.
6W7-G DRIVER
6Z7-G OUTPUT
1ST. IF TRANS.
2ND. IF TRANS.
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI"
VERTICAL "O" TO CHASSIS
TONE CONTROL
VOLUME CONTROL TOTAL 2 MEG TAP 500M
LINK OPEN FOR PHONO
-10V. AVC WITH 0.2V. INPUT TO ANT. (600KC)
3V. BIAS FOR GAIN DATA.
6N5 TUNING IND.
-10V.-(600KC) -12V.-(1500KC) A
-5V.-(3MC) -9V.-(9MC) B
-8V.-(31M) -8V.-(25M) -7V.-(19-13M)
VOLTAGES IN PARENTHESES ARE THOSE OBTAINED BY USING VIBRATOR TYPE POWER SUPPLY UNIT MI-8122.
WHEN THE CV-110 POWER UNIT IS USED VOLTAGES NOT IN PARENTHESES APPLY.
CATHODE CURRENTS
TUBE | CV-110 | MI-8122
(1) 6S7 | 12.6 MA | 14.7 MA
(2) 6SA7 | 7.7 MA | 9.2 MA
(3) 6S7 | 6.4 MA | 7.3 MA
(4) 6T7G | .25MA | .3MA
(5) 6W7G | 5.4 MA | 7.4 MA
(6) 6Z7G | 7.4 MA | 9.0 MA
(7) 6N5 | 1.2 MA | 1.5 MA
*MEASURED WITH CHANALYST OR VOLTOHMYST.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAX. COUNTER-CLOCKWISE POSITION)
SWITCH ON TONE CONTROL
SWITCH ON VOLUME CONTROL
TO ALL HEATERS
PLUG TO POWER SUPPLY (TERM. VIEW)
DIAL LAMPS
P-92186-2 RC 539D QB3

**C15, 66 mmfd., Stock No. 36072:**

In 2nd Production of QB3, C15 is changed to 66 mmfd. (Stock No. 36072, List Price $.30) to improve tracking.

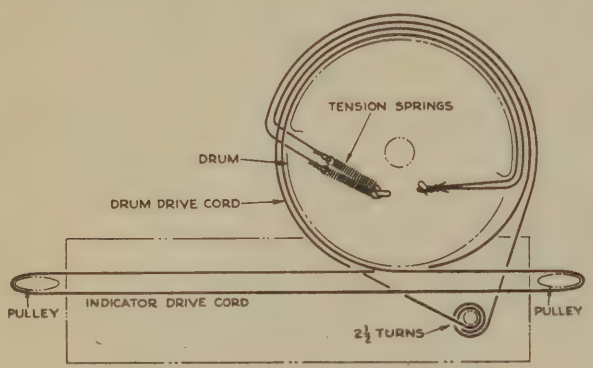
*Schematic Circuit Diagram*



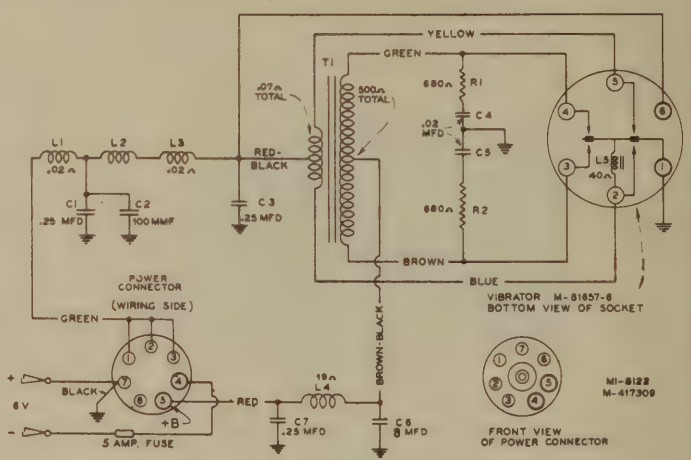

*CV-110 A-C Power Supply Unit*

*MI-8122 Vibrator Type Power Supply Unit*

The pilot lights are illuminated by pressing in the volume-control knob. (The pilot lights are not controlled by this action when the receiver is operated with the CV-110 A-C power supply unit.)




*Condenser and Indicator Drive Cords*




## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.—**

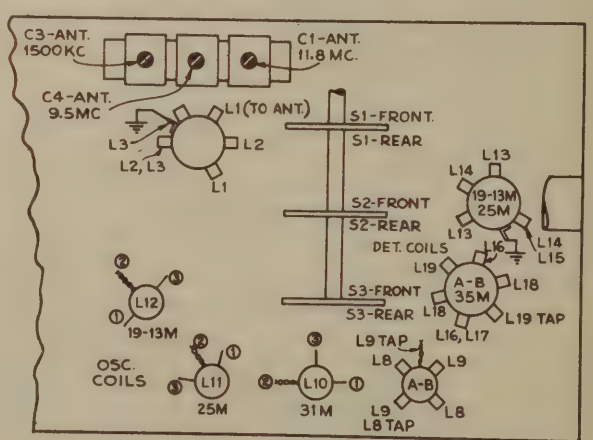
As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.

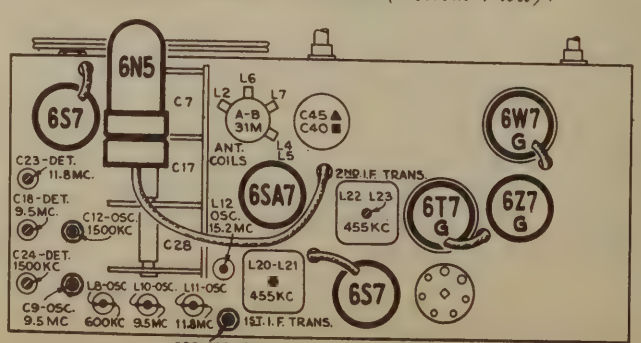
**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."




*Coil and Trimmer Locations (Bottom View)*




*Tube and Trimmer Locations (Top View)*

## Alignment Procedure

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range Switch | Turn Radio Dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6S7 I-F grid in series with .01 mfd. | 455 kc | "A" band | Quiet point 600 kc end of dial | L23-L22 2nd I-F transformer |
| 2 | 6SA7 1st det. grid in series with .01 mfd. | | | | L21-L20 1st I-F transformer |
| 3 | Antenna terminal in series with 300 ohms | 11.8 mc | 25 meter band | 11.8 mc (41.5°) | L11 (osc.) C1 (ant.) C23 (det.) |
| 4 | | 15.2 mc | | 15.2 mc (161.7°) | C26 (osc.)*† |
| 5 | Repeat steps 3 and 4 until aligned. | | | | |
| 6 | Antenna terminal in series with 300 ohms | 15.2 mc | 19-13 meter band | 15.2 mc (24°) | L12 (osc.)** |
| 7 | | 9.5 mc | 31 meter band | 9.5 mc (23.8°) | L10 (osc.)** C4 (ant.) C18 (det.)*** |
| 8 | | 9.5 mc | "B" band | 9.5 mc (168.5°) | C9 (osc.)* |
| 9 | Antenna terminal in series with 200 mmfd. | 1,500 kc | "A" band | 1,500 kc (153°) | C12 (osc.) C3 (ant.) C24 (det.) |
| 10 | | 600 kc | | 600 kc (30.5°) | L8 (osc.) Rock in |
| 11 | Repeat steps 9 and 10. | | | | |

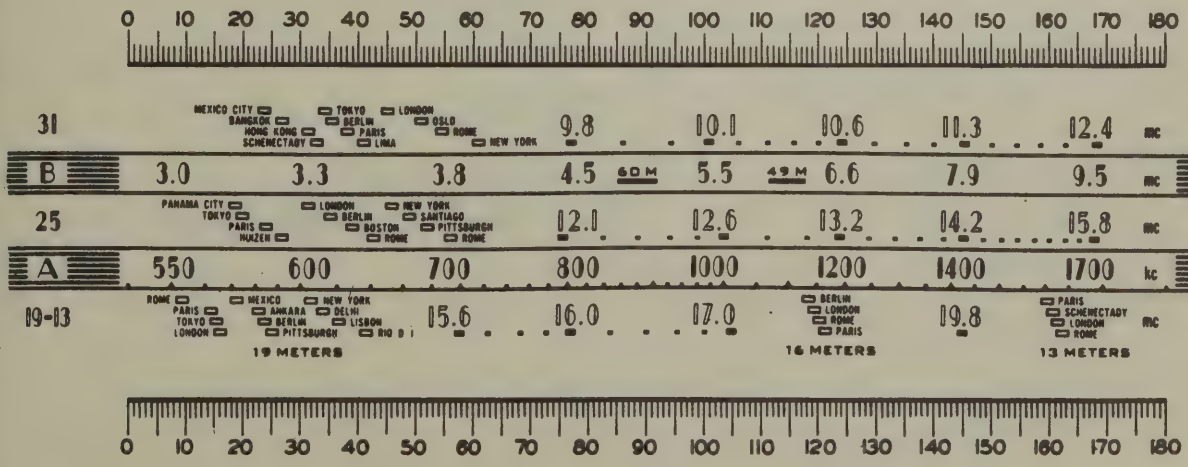
* Use minimum capacity peak if two can be obtained.

** Peak at minimum plunger position if two peaks can be obtained.

*** Use maximum capacity peak if two peaks can be obtained.

† Check image to determine that C26 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

**NOTE: Oscillator tracks above signals on all bands.**




## Calibration Scale

*Reduced Reproduction of Receiver Dial and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 30° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-539D)** |
| 34502 | Arm—Range switch actuating arm |
| 12717 | Board—Phono input terminal board |
| 37092 | Calibrator—Printed chart for Stock No. 37090 drum |
| 12714 | Capacitor—Plunger type air-trimmer |
| 37059 | Capacitor—3 section mica trimmer 2.5 to 10 mfd. each section |
| 33097 | Capacitor—4.7 mmfd. |
| 35646 | Capacitor—6 mmfd. |
| 13200 | Capacitor—10 mmfd., moulded |
| 31350 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 37329 | Capacitor—47 mmfd., silvered mica |
| 12723 | Capacitor—56 mmfd. |
| 35645 | Capacitor—68 mmfd., ceramic |
| 13057 | Capacitor—68 mmfd., silvered mica |
| 30904 | Capacitor—100 mmfd., mica |
| 30949 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd., moulded |
| 31433 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 32707 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—.25 mfd. (C39) |
| 12484 | Capacitor—.25 mfd. (C42) |
| 12741 | Capacitor—.5 mfd. |
| 32152 | Capacitor—Electrolytic comprising 2 sections of 15 mfd., 250 volts each |
| 37093 | Coil—A-B band oscillator coil |
| 37055 | Coil—A-B and 31 meter band antenna coil |
| 37057 | Coil—A-B and 31 meter band R.F. coil |
| 35624 | Coil—13 and 19 meter band oscillator coil |
| 37056 | Coil—13-19 and 25 meter band antenna coil |
| 37058 | Coil—13-19 and 25 meter band R.F. coil |
| 35625 | Coil—25 meter band oscillator coil |
| 35626 | Coil—31 meter band oscillator coil |
| 37086 | Condenser—3 gang variable tuning condenser |
| 37926 | Control—Tone control and power switch |
| 37897 | Control—Volume control and dial lamp switch |
| 32634 | Cord—Drive or pointer cord (approx. 50 in. lg.) |
| 37090 | Drum—Tuning condenser drum—less calibration chart |
| 37091 | Flywheel—Wheel and tuning shaft assembly |
| 37094 | Link—Link, arm and bushing assembly |
| 14028 | Nut—Clamping nut for Stock No. 12714 capacitor |
| 31817 | Plate—Cushion socket mounting plate |
| 12493 | Plug—5 contact female plug for speaker cable |
| 14404 | Plug—7 contact male plug |
| 35641 | Pulley—Drive cord pulley |
| 37089 | Pulley—Left hand dial cord pulley and bracket |
| 37088 | Pulley—Right hand dial cord pulley and bracket |
| 3153 | Resistor—1,500 ohms, 1 watt |
| 34767 | Resistor—2,200 ohms, ½ watt |
| 30788 | Resistor—4,700 ohms, 1 watt |
| 13098 | Resistor—22,000 ohms, ½ watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 12284 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30963 | Resistor—820,000 ohms, ½ watt |
| 12013 | Resistor—1 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30208 | Resistor—1.2 meg., ½ watt |
| 11769 | Resistor—1.8 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 37096 | Shaft—Indicator shaft |
| 37095 | Shaft—Range switch actuating shaft |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Eight prong tube socket |
| 34864 | Socket—Tuning tube socket |
| 31418 | Spring—Dial cord spring |
| 13638 | Spring—Dial cord tension spring |
| 37050 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 37898 | Transformer—Driver transformer |
| | **POWER SUPPLY UNIT ASSEMBLIES (MI-8122)** |
| 12720 | Capacitor—100 mmfd. |
| 31796 | Capacitor—.02 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 33879 | Capacitor—Electrolytic 10 mfd., 300 volts |
| 14289 | Clip—Battery clips—one marked "+" and one unmarked |
| 12819 | Coil—Choke coil |
| 31794 | Coil—Choke coil |
| 5140 | Fuse—5 amp. |
| 14409 | Plug—7 contact female plug for power cable |
| 12662 | Resistor—680 ohms, ½ watt |
| 4786 | Socket—Vibrator socket |
| 31793 | Transformer—Vibrator power transformer |
| 31795 | Vibrator—Plug-in vibrator |
| | **SPEAKER ASSEMBLIES (RL-90-5)** |
| 31825 | Cap—Dust cap |
| 35193 | Cone—Speaker cone complete with voice coil |
| 12567 | Plug—5 prong male plug for speaker |
| 37899 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37900 | Back—Cabinet back cover |
| 30716 | Clip—Tuning tube clip and thumb screw |
| 37921 | Crystal—Tuning tube crystal |
| 35389 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 35449 | Decalcomania—Volume control decal |
| 37281 | Dial—Glass dial scale |
| 37922 | Indicator—Station selector indicator |
| 35652 | Knob—Range indicator knob |
| 35651 | Knob—Range switch knob |
| 35650 | Knob—Tone switch knob |
| 35955 | Knob—Tuning or volume control knob |
| 31480 | Lamp—Dial lamp |
| 33438 | Screw—Thumb screw for clip Stock No. 30716 |
| 14270 | Spring—Retaining spring for knobs Stock Nos. 35650, 35955, and 35651 |
| 4982 | Spring—Retaining spring for knob Stock No. 35652 |
| | **CV-110 A-C POWER SUPPLY UNIT** |
| 32015 | Capacitor—1 mfd. (C2) |
| 32013 | Capacitor—Comprising 2 sections 16 mfd. each (C1, C3) |
| 14409 | Plug—7-contact plug for power output cable |
| 32014 | Reactor—Filter reactor (L1) |
| 30880 | Resistor—150 ohms, ½ watt (R1) |
| 31251 | Socket—Rectifier tube socket |
| 31998 | Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 25-60 cycles (T1) |

# MODELS Q26, QU3M, QU3C

**Chassis No. RC-507J, RC-507H, RC-507F**

## Six-Tube, Five-Band, A-C, Superheterodyne Receiver and Radio-Phonograph

### Electrical and Mechanical Specifications

**FREQUENCY RANGES**

| | |
|---|---|
| Standard Broadcast ("A" band) | 540-1,720 kc (556-174 m) |
| Medium Wave ("B" band) | 3.0-9.5 mc (100-31.6 m) |
| "31" Meter Spread Band | 9.5-11.7 mc (31.6-25.6 m) |
| "25" Meter Spread Band | 11.7-15.1 mc (25.6-19.9 m) |
| "19-13" Meter Spread Band | 15.1-22.5 mc (19.9-13.3 m) |

**INTERMEDIATE FREQUENCY** ..... 455 kc

**POWER SUPPLY RATING**

QU3 ..... 105-125, 200-250 volts, 50-60 cycles, 80 watts total

| | Voltages | Frequency (cycles) | Watts |
|---|---|---|---|
| Q26 | 105-125 | 50-60 | 65 |
| | 105-125 | 25-60 | 65 |
| | 105-125, 200-250 | 50-60 | 65 |

**TUBE COMPLEMENT**

| | |
|---|---|
| (1) RCA-6SA7 | 1st Detector-Oscillator |
| (2) RCA-6SK7 | I-F Amplifier |
| (3) RCA-6SQ7 | 2nd Detector, A-F Amplifier, A.V.C. |
| (4) RCA-6AD7-G | Phase-Inverter, Power Output |
| (5) RCA-6F6-G | Power Output |
| (6) RCA-5Y3-G | Rectifier |
| (7) RCA-6U5 (Q26 only) | Tuning Indicator |

**LOUDSPEAKER**

| | QU3 | Q26 |
|---|---|---|
| Model | RL-63J6 | RL-63K5 |
| Type (Electrodynamic) | 8-inch | 8-inch |
| V-C Impedance at 400 c.p.s. | 2.2 ohms | 2.2 ohms |

**POWER OUTPUT**

| | |
|---|---|
| Undistorted | 3 watts |
| Maximum | 3.5 watts |

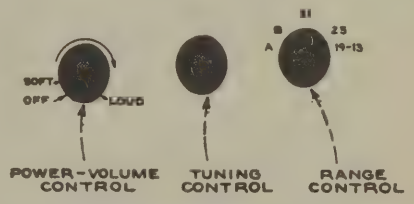
**PHONOGRAPH MOTOR**— Self-starting, constant-speed, induction type.

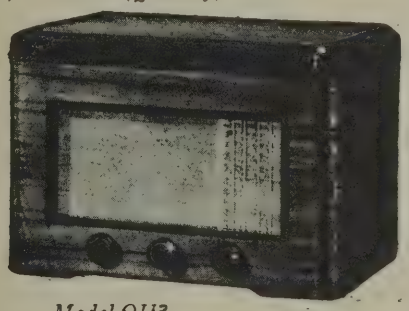
**CRYSTAL PICKUP (QU3C)**

| | |
|---|---|
| Impedance | 100,000 ohms at 1,000 c.p.s. |
| Average Output | 1.5 volts at 1,000 c.p.s. across 500,000 ohm load |

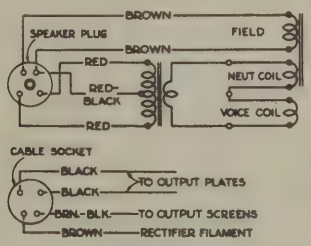
**MAGNETIC PICKUP (QU3M)**

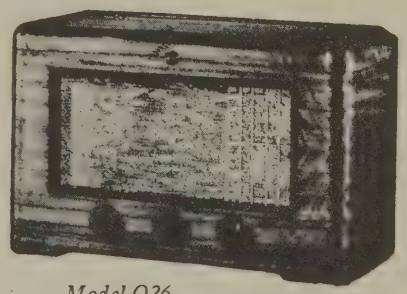
| | |
|---|---|
| Impedance | 96 ohms at 1,000 c.p.s. |
| Average Output | 0.14 volts at 400 c.p.s. across open circuit |



*Model QU3*

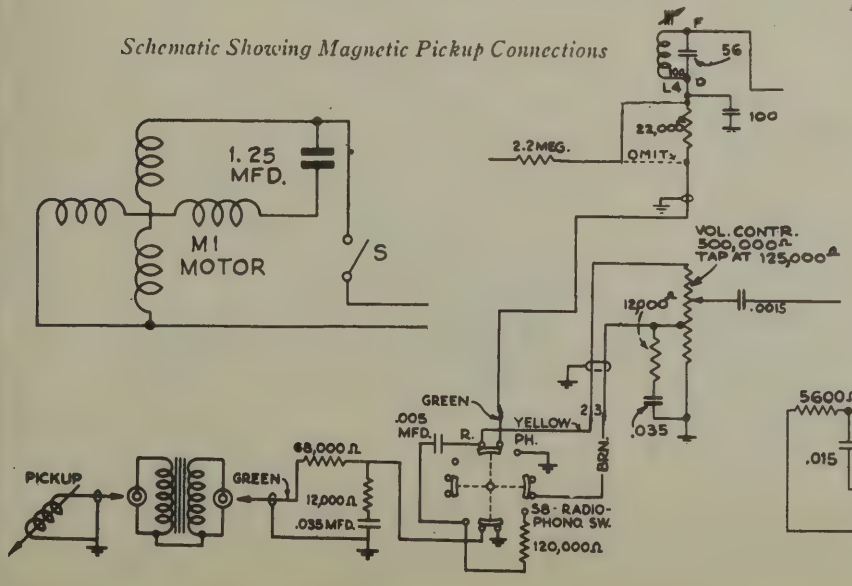


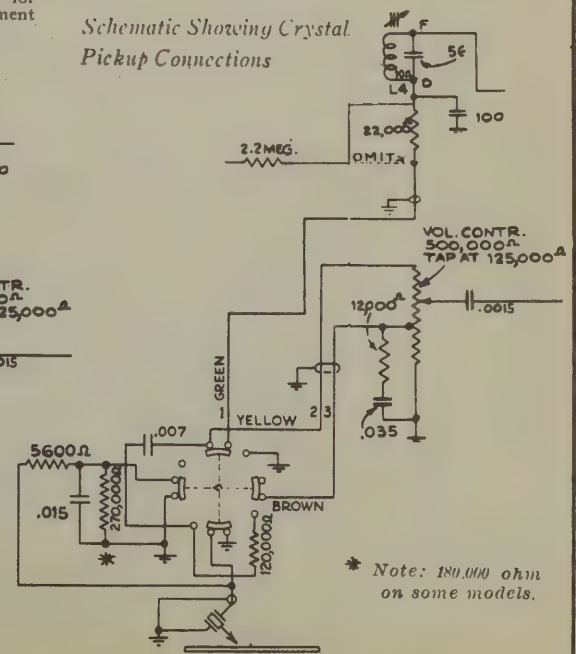
*Model Q26*

**Victrola Attachment.**—A jack is provided on the rear of Q26 for connection to a Victrola Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

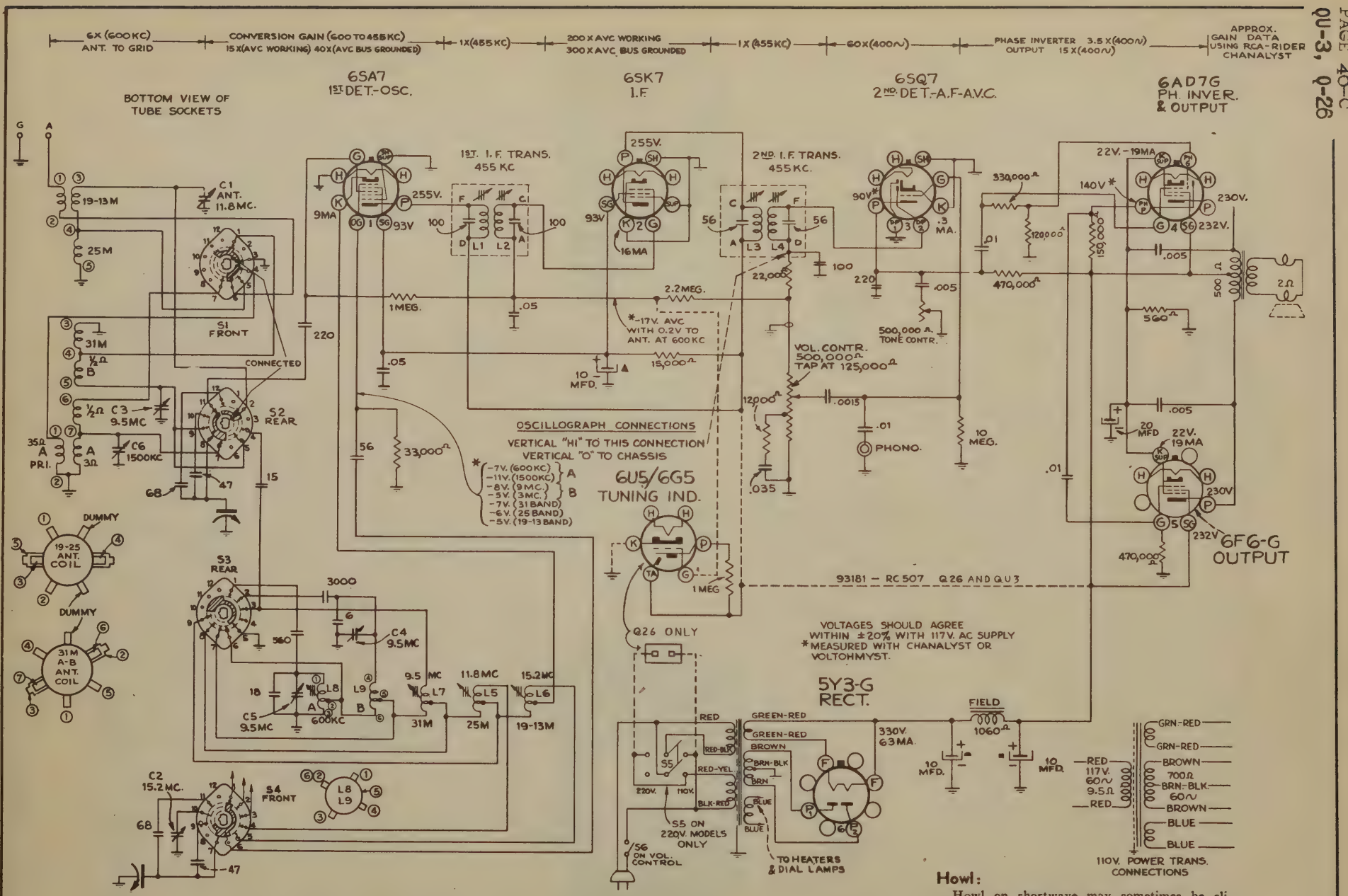
*Schematic Showing Magnetic Pickup Connections*




*Schematic Showing Crystal Pickup Connections*




* *Note: 180,000 ohm on some models.*




*Schematic Circuit Diagram for Model Q26*

**Howl:**

Howl on shortwave may sometimes be eliminated by changing capacitor C-41 from .007 to .005 mfd. (Stock No. 33640).

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

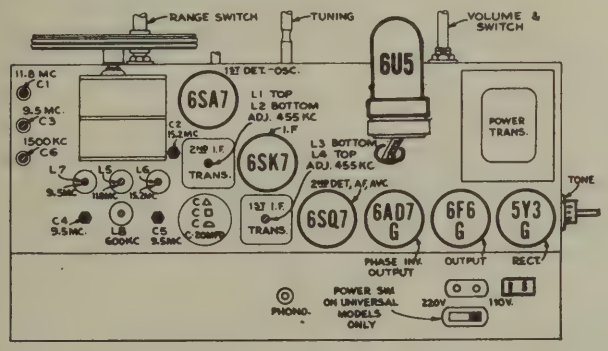
To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

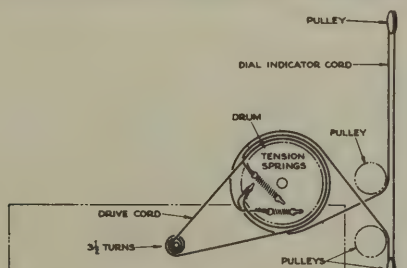
**Dial-Indicator Adjustment.** — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**




*Note: 6U5 and 110-V receptacle on Q26 only.*




The QU3M is equipped with a magnetic pickup, and the QU3C with a crystal pickup. The output of the crystal pickup is fed into the audio end of the receiver through a switch and compensating circuit. On instruments using a magnetic pickup, a transformer and compensating circuit are used between the pickup and the audio input (see schematic diagram). The transformer has two jacks, the larger one (primary) for input from the pickup and the smaller one (secondary) for output to the compensating circuit. The components of the compensating circuit are mounted externally to the chassis on a terminal board in the cabinet.

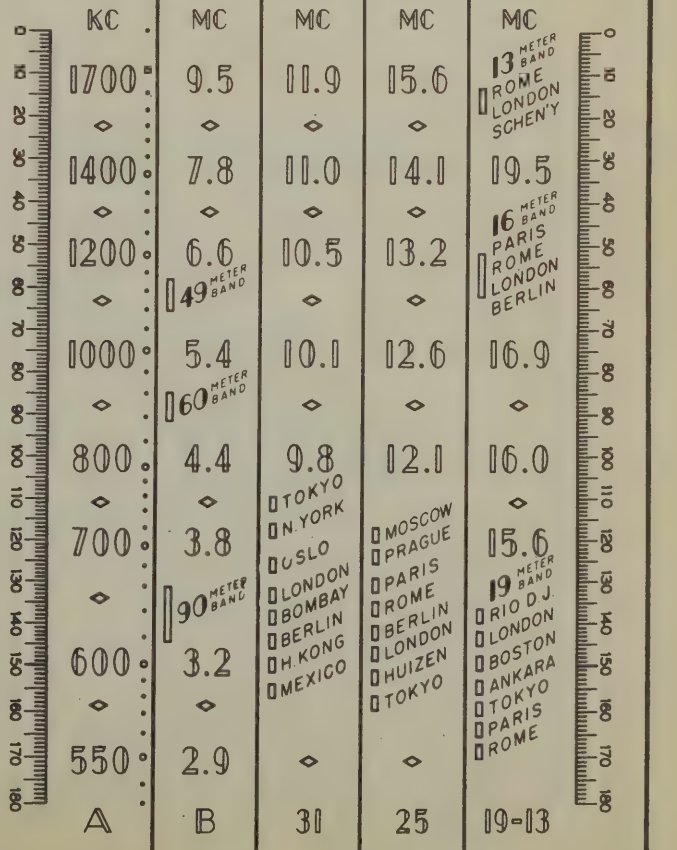
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | A | Quiet Point near 180° | L3 and L4 2nd I-F Trans. |
| 2 | 1st Det. grid in series with .01 mfd. | | | | L1 and L2 1st I-F Trans. |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L5 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C2 (osc.)* |
| 5 | | Repeat steps 3 and 4 | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L6 (osc.)** |
| 7 | | 9.5 mc | 31M | 156° | L7 (osc.)** C3 (ant.) |
| 8 | | 9.5 mc | B | 11.5° | C4 (osc.)*** |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C5 (osc.) C6 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | | Repeat steps 9 and 10 | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C2 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

**Peak at minimum position of plunger if two peaks can be obtained.

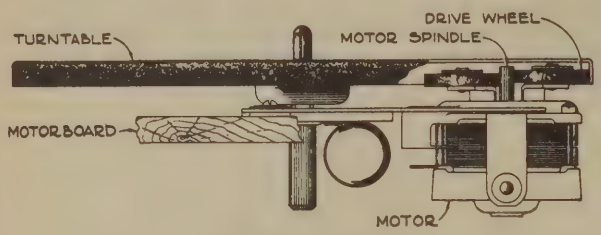
***Peak at minimum capacity if two peaks can be obtained.

**NOTE:** Oscillator tracks above signal on all bands.



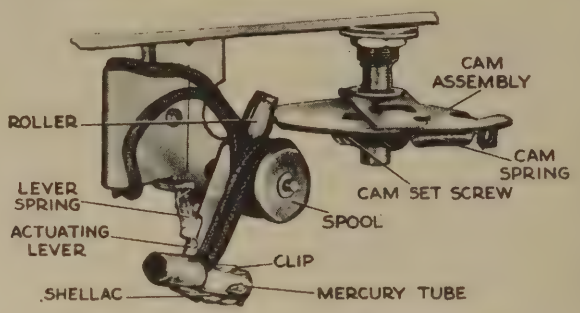
The phonograph motor has its bearing filled with oil and sealed at the factory and hence should not require lubrication in the field. However the two rubber tired idler pulleys should have their bearings lubricated occasionally with S.A.E. 10 oil. Care should be taken not to get any oil, grease, or other foreign matter on the rubber tires. These tires and the motor spindle should be cleaned occasionally with quick drying naphtha.

The turntable spindle bearing should also be lubricated occasionally with S.A.E. 10 oil.

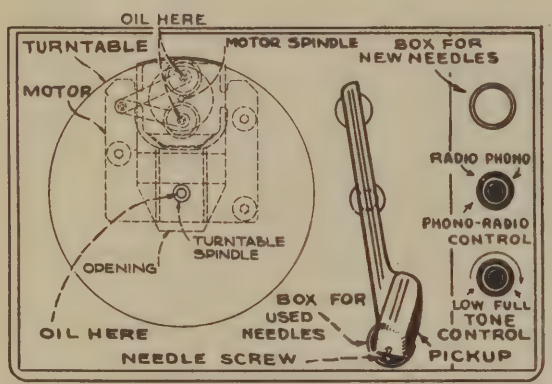



*Motor Detail*

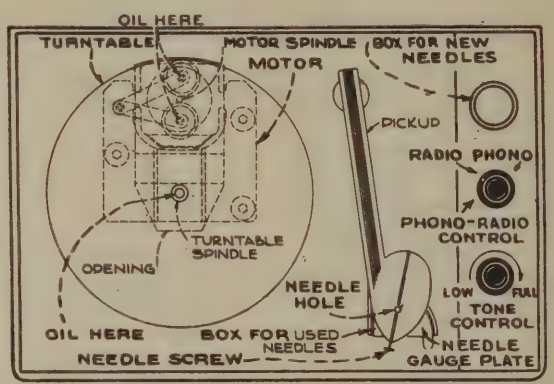
The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1¾ inches from the center line of the spindle shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.




MERCURY SWITCH MECHANISM
(VIEWED FROM FRONT
SHOWN WITH PICKUP IN REST POSITION)




*Top View Model QU3M*




*Top View Model QU3C*

**Precautionary Lead Dress.—**

1. All leads between antenna coils and switch must be as short as possible and kept away from oscillator coil, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.
3. Blue plate lead of 2nd I-F should be dressed under other leads and against chassis.

**Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.**

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **CHASSIS ASSEMBLIES.**<br>Model QU3C (RC-507F)<br>Model QU3M (RC-507H)<br>Model Q26 (RC-507J) | | 31433 | Capacitor—560 mmf. | |
| 33595 | Cable—Shielded phono input cable for Model QU3M | | 35643 | Capacitor—3,000 mmf. | |
| 36398 | Cable—Shielded radio-phono cable | | 4838 | Capacitor—.005 mfd., 1,000 volts | |
| 36397 | Calibrator—Drive drum calibrator | | 33584 | Capacitor—.005 mfd., 1,200 volts | |
| 12714 | Capacitor—Air trimmer | | 33640 | Capacitor—.007 mfd. (Models QU3C, QU3M) | |
| 34654 | Capacitor—Mica trimmer—3 sections of 2.5-10 mmf. | | 4937 | Capacitor—.01 mfd. (C25) | |
| 35646 | Capacitor—6 mmf. | | 14393 | Capacitor—.01 mfd. (C28) | |
| 36012 | Capacitor—15 mmf. | | 11315 | Capacitor—.015 mfd. (Model QU3C) | |
| 31350 | Capacitor—18 mmf. | | 4870 | Capacitor—.025 mfd. | |
| 35644 | Capacitor—47 mmf., ceramic | | 5196 | Capacitor—.035 mfd. (Model QU3M) | |
| 13141 | Capacitor—47 mmf., silvered mica | | 32787 | Capacitor—.05 mfd. (C19) | |
| 12723 | Capacitor—56 mmf., moulded mica | | 4886 | Capacitor—.05 mfd. (C35) | |
| 30949 | Capacitor—56 mmf., mica (Models QU3C, QU3M) | | 33014 | Capacitor—Electrolytic, comprising 3 sections of 10 mfd. and 1 section of 20 mfd. | |
| 35645 | Capacitor—68 mmfd., ceramic | | 35632 | Coil—Antenna coil—"A" band | |
| 13057 | Capacitor—68 mmfd., silvered mica | | 35631 | Coil—Antenna coil—spread band | |
| 30904 | Capacitor—100 mmf., mica (Models QU3C, QU3M) | | 35623 | Coil—Oscillator coil—"A" and "B" band | |
| 12720 | Capacitor—100 mmf., moulded mica | | 35624 | Coil—Oscillator coil—19-13 meter band | |
| 12694 | Capacitor—220 mmf. | | 35625 | Coil—Oscillator coil—25 meter band | |
| | | | 35626 | Coil—Oscillator coil—31 meter band | |
| | | | 35619 | Condenser—Variable tuning condenser | |
| | | | 36035 | Control—Tone control (H.F.) (Models QU3C, QU3M) | |
| | | | 36416 | Control—Tone control (Model Q26) | |
| | | | 35946 | Control—Volume control and power switch | |

# Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 32634 | Cord—Condenser drive cord (approx. 34 inches overall) |
| 32634 | Cord—Pointer drive cord (approx. 40 inches overall) |
| 35788 | Core—Adjustable core and stud for "A" and "B" band oscillator coil |
| 31259 | Core—Adjustable core and stud for 19-13 meter, 31 meter and 25 meter band oscillator coils |
| 36396 | Drum—Drive drum, less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 35630 | Pulley—Drive cord pulley—1⅛ inch dia. |
| 35973 | Pulley—Drive cord pulley—¾ inch dia. |
| 36637 | Receptacle—Power line receptacle (Model Q26) |
| 30735 | Resistor—560 ohms, 1 watt |
| 13714 | Resistor—5,600 ohms, ½ watt (Model QU3C) |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt (Model QU3M) |
| 14560 | Resistor—100,000 ohms, ½ watt (Model Q26) |
| 13734 | Resistor—120,000 ohms, ½ watt (Models QU3M, QU3C) |
| 30493 | Resistor—150,000 ohms, ½ watt |
| 13698 | Resistor—180,000 ohms, ½ watt for QU3C |
| 13479 | Resistor—390,000 ohms, ½ watt (Model Q26) |
| 14983 | Resistor—330,000 ohms, ½ watt (Models QU3M, QU3C) |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt (Models QU3M, QU3C) |
| 12013 | Resistor—1 megohm, 1/10 watt (Model Q26) |
| 13730 | Resistor—1 megohm, ½ watt |
| 12679 | Resistor—2.2 megohm, ½ watt |
| 13601 | Resistor—10 megohm, ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drum |
| 35948 | Shaft—Range switch extension shaft |
| 35949 | Shaft—Tuning shaft |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono-input socket (Model Q26) |
| 31251 | Socket—Tube socket |
| 34864 | Socket—Tuning tube socket (Model Q26) |
| 13638 | Spring—Drive cord spring |
| 31418 | Spring—Pointer cord spring |
| 35622 | Support—Tuning shaft support |
| 36036 | Switch—Radio phono switch (Models QU3M, QU3C) |
| 35947 | Switch—Range switch |
| 32827 | Switch—Voltage change switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 32910 | Transformer—Power transformer—105-120 volts, 25 cycle (Model Q26) |
| 32911 | Transformer—Power transformer—110 volts, 60 cycle |
| 32852 | Transformer—Power transformer—110/220 volts, 60 cycle |
| 2917 | Washer—"C" washer for tuning shaft |
| | **MOTOR ASSEMBLIES** For Models QU3C and QU3M |
| 36986 | Arm—Drive wheel or idler wheel support arm |
| 36988 | Armature—Armature complete for 105-125 volt, 50 cycle motor |
| 36987 | Armature—Armature complete for 105-125 volt, 60 cycle motor |
| 36989 | Bushing—Motor mounting rubber bushings |
| 36991 | Capacitor—Motor capacitor for 105-125 volt, 50 cycle motor |
| 36990 | Capacitor—Motor capacitor for 105-125 volt, 60 cycle motor |
| 36993 | Cover—Bakelite top end shell for 105-125 volt, 50 cycle motor |
| 36992 | Cover—Bakelite top end shell for 105-125 volt, 60 cycle |
| 36985 | Motor—105-125 volt, 50 cycle motor less pulleys, capacitor and cradle |
| 36984 | Motor—105-125 volt, 60 cycle motor less pulleys, capacitor and cradle |
| 36995 | Plate—Motor support plate complete with turntable bearing |
| 36997 | Spring—Idler arm tension spring |
| 36996 | Spindle—Turntable spindle |
| 36994 | Wheel—Rubber tired idler or drive wheel |
| | **MAGNETIC PICKUP AND ARM ASSEMBLIES** For Model QU3M |
| 36929 | Arm—Pickup arm less mechanism, pivot arm, and cable |
| 36930 | Arm—Pivot arm and set screw |
| 14291 | Armature—Pickup armature |
| 11730 | Cable—Shielded pickup cable |
| 14930 | Coil—Pickup coil |
| 14292 | Damper—Pickup armature damper |
| 32228 | Mechanism—Pickup unit mechanism complete |
| 11951 | Screw—Needle screw |
| 34300 | Screw—No. 6-32x¼ headless set screw for pivot arm |

| STOCK No. | DESCRIPTION |
|---|---|
| | **CRYSTAL PICKUP AND ARM ASSEMBLIES** For Model QU3C |
| 33906 | Arm—Pickup arm—shell only |
| 33908 | Base—Pickup support arm base and retainer |
| 33905 | Crystal—Pickup crystal cartridge |
| 33907 | Support—Pickup support arm complete—less base |
| | **AUTOMATIC SWITCH ASSEMBLIES** For Models QU3C and QU3M |
| 34312 | Base—Pickup arm base (QU3M) |
| 34419 | Base—Pickup arm mounting base (QU3C) |
| 32865 | Bracket—Switch bracket and terminal board |
| 34308 | Cam—Switch cam assembly with spring |
| 34007 | Lever—Switch actuating lever, roller and clip |
| 34309 | Mounting—Pickup arm base mounting (rubber grommet, washers and nut) |
| 34311 | Ring—Retaining ring for pickup arm pivot shaft |
| 14195 | Screw—No. 10-32x5/16 set screw for switch cam hub |
| 36177 | Shaft—Pickup arm pivot shaft (QU3M) |
| 34314 | Shaft—Pickup arm pivot shaft (QU3C) |
| 34310 | Spool—Insulating spool for switch leads |
| 32868 | Spring—Switch lever spring |
| 32867 | Spring—Tension spring for switch cam |
| 32866 | Switch—Mercury tube and leads |
| 31608 | Washer—Retaining washer for switch lever |
| | **SPEAKER ASSEMBLIES** (RL-63-J-6; RL-63-K-5) |
| 13866 | Cap—Dust cap (RL-63-J-6) |
| 31825 | Cap—Dust cap (RL-63-K-5) |
| 12079 | Coil—Field coil, 1,060 ohms |
| 11469 | Coil—Neutralizing coil (RL-63-J-6) |
| 34615 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male plug speaker |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36979 | Back—Cabinet back cover (Models QU3C, QU3M) |
| 36592 | Baffle—Baffle board, including pointer rail and lamp bracket less grille cloth |
| 36981 | Bracket—Lamp bracket |
| 4288 | Cap—Connector cap for pickup lead (Model QU3C) |
| 34285 | Clip—Tube clip (Model Q26) |
| 36640 | Crystal—Tuning indicator tube crystal (Model Q26) |
| 33910 | Cup—Needle cup (1 required Model QU3C) (2 required Model QU3M) |
| 33909 | Cup—Used needle cup and pickup rest (Model QU3C) |
| 36074 | Decalcomania—Radio-phono decal (Models QU3C, QU3M) |
| 35388 | Decalcomania—Tone switch decal (Models QU3C, QU3M) |
| 35467 | Decalcomania—Trade mark decal (Models QU3C, QU3M) |
| 35392 | Decalcomania—Trade mark decal (Model Q26) |
| 36594 | Dial—Glass dial scale |
| 36470 | Escutcheon—Needle cup escutcheon (Model QU3C) |
| 4286 | Ferrule—Bushing and ferrule insert for pickup lead cap (Model QU3C) |
| 13085 | Hinge—Cabinet lid hinge (Models QU3C, QU3M) |
| 36593 | Indicator—Dial pointer |
| 35652 | Knob—Range switch indicator knob (inner portion only) |
| 35651 | Knob—Range switch knob (outer portion only) |
| 36038 | Knob—Phono-radio switch (Models QU3C, QU3M) |
| 36038 | Knob—Tone control (Models QU3C, QU3M) |
| 35650 | Knob—Tone control (Model Q26) |
| 35955 | Knob—Tuning and volume control |
| 11765 | Lamp—Pilot lamp |
| 36471 | Mounting—Motor mounting screw, grommet, spacer and washers (for 1 motor) (Models QU3C, QU3M) |
| 30870 | Plug—2-prong male plug for motor leads (Models QU3C, QU3M) |
| 33960 | Plug—Male plug for pickup leads (Model QU3M) |
| 36980 | Rail—Station pointer rail |
| 36394 | Rest—Pickup arm rubber rest (Model QU3M) |
| 36641 | Retainer—Tuning indicator tube crystal retainer (Model Q26) |
| 4982 | Spring—Retaining spring for knob (Model Q26) Stock No. 35652 |
| 14270 | Spring—Retaining spring for knobs (Model Q26) Stock Nos. 35650, 35955, 35651 |
| 36940 | Support—Cabinet lid support (Models QU3C, QU3M) |
| 14609 | Transformer—Input transformer (Models QU3C, QU3M) |
| 34422 | Turntable—9 inch dia. (Models QU3C, QU3M) |

# MODELS 4QB and 4QB4

## Chassis No. RC-440 and RC-440A

## Four-Tube, Three-Band, Battery-Operated Receivers

## and

## Model CV-111 (RS-95) A-C Power Unit

### Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| **Model 4QB** | |
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22 mc (42.8-13.6 m) |
| **Model 4QB4** | |
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Short Wave ("C" Band) | 5.8-18 mc (51.7-16.6 m) |
| Long Wave ("X" Band) | 145-385 kc (2069-779 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

RCA TUBE COMPLEMENT

(1) RCA-1A7-G ..... 1st Det.—Oscillator
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G .. 2nd Det., A.F., and A.V.C.
(4) RCA-1C5-G ..... Power Output

POWER OUTPUT RATING

| | Undistorted | Maximum |
|---|---|---|
| With Battery Supply.. | 0.13 watt | 0.23 watt |
| With A-C Supply..... | 0.20 watt | 0.46 watt |

LOUDSPEAKER

Type ..... 5-inch permanent-magnet dynamic
Voice-coil Impedance .... 3 ohms at 400 cycles

BATTERIES REQUIRED

One 1½-volt "A" battery, and
Two 45-volt "B" batteries, or
One 1½-90-volt battery pack.

*Models 4QB and 4QB4*

BATTERY DRAIN

"A" ..... .25 amp.
"B" ..... 10.5 ma.

DIMENSIONS (inches)

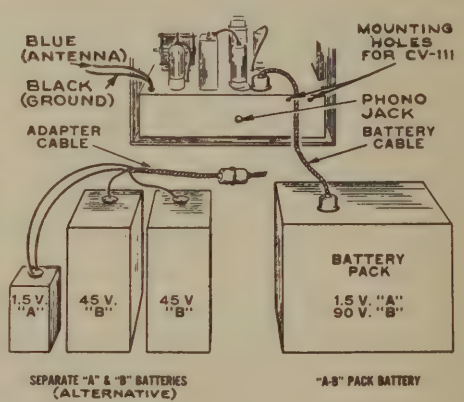
| | Height | Width | Depth |
|---|---|---|---|
| Cabinet | 9¾ | 13⅜ | 8⅞ |
| Chassis Base | 2¾ | 12 | 5¼ |

Chassis Over-all Height ..... 7 inches
Tuning Drive Ratio ..... 18 to 1

CV-111 A-C POWER SUPPLY UNIT

Power Rating ..... 105-125/200-250 volts, 50-60 cycles, 65 watts
Rectifier Tube ..... RCA-5T4
Ballast Resistor Tube ..... Type 86892-3
Dial Lamp .... Mazda 44, 6.3 volts, 0.25 amp.
Dimensions (inches) ..... 5 x 3¼ x 6¾
Net Weight ..... 5 lbs.

*Separate "A" and "B" batteries or an "A-B" battery pack may be used.*




## General Alignment Data for Models 4QB and 4QB4

*(Refer to specific "Alignment Procedure" for each model)*

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.** — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

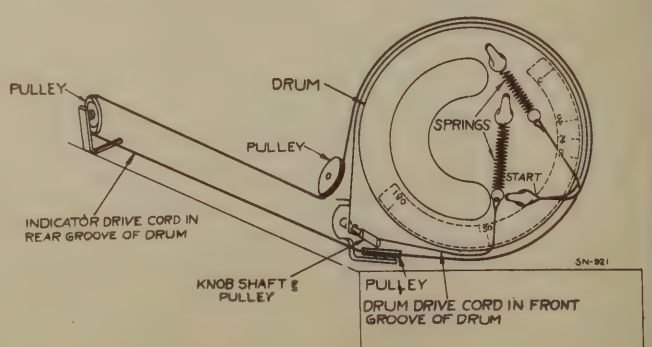
**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45 degree mark on drum scale should be in an approximately horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ⅛-inch. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 580 kc mark, (last mark at end of "A" scale) and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

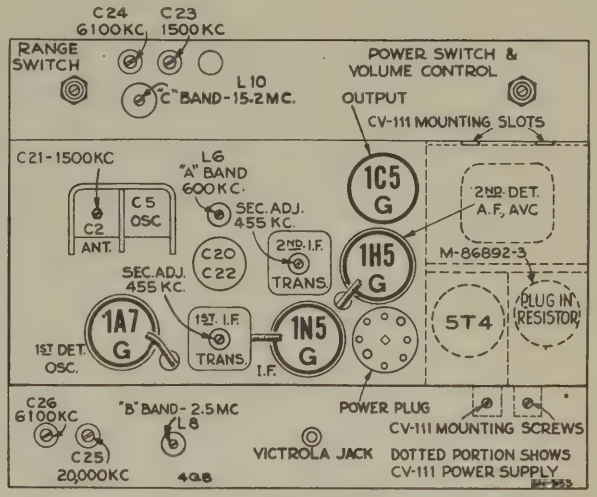



*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*
**(Drum shown with gang in maximum-capacity position)**

# Model 4QB Alignment Procedure

*(Refer to section on "General Alignment Data")*

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | 1N5-G I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, quiet point at high-frequency end | L14 and L13 (2nd I-F Trans.) |
| 2 | 1A7-G 1st-Det. grid cap, in series with .01 mfd. | | | L12 and L11† (1st I-F Trans.) |
| 3 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc (152.5°) "A" band | Preset L6 (osc.) core 5/16-in. out. Peak C23 (osc.) and C21 (ant.) |
| 4 | | 600 kc | 600 kc (33°) "A" band | L6 (osc.)** |
| 5 | | Repeat steps 3 and 4 | | |
| 6 | | 6.1 mc | 6.1 mc (151°) "B" band | Preset L8 (osc.) core ¼-in. out. Peak C24 (osc.)* and C26 (ant.) |
| 7 | | 2.5 | 2.5 mc (29.5°) "B" band | L8 (osc.)** |
| 8 | | Repeat steps 6 and 7 | | |
| 9 | Antenna lead, in series with 300 ohms | 15.2 mc | 15.2 mc (122°) "C" band | L10 (osc.) |
| 10 | | 20 mc | 20 mc (155.5°) "C" band | C25 (ant.)†† Rock gang |
| 11 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc (152.5 kc) "A" band | C23 (osc.) |



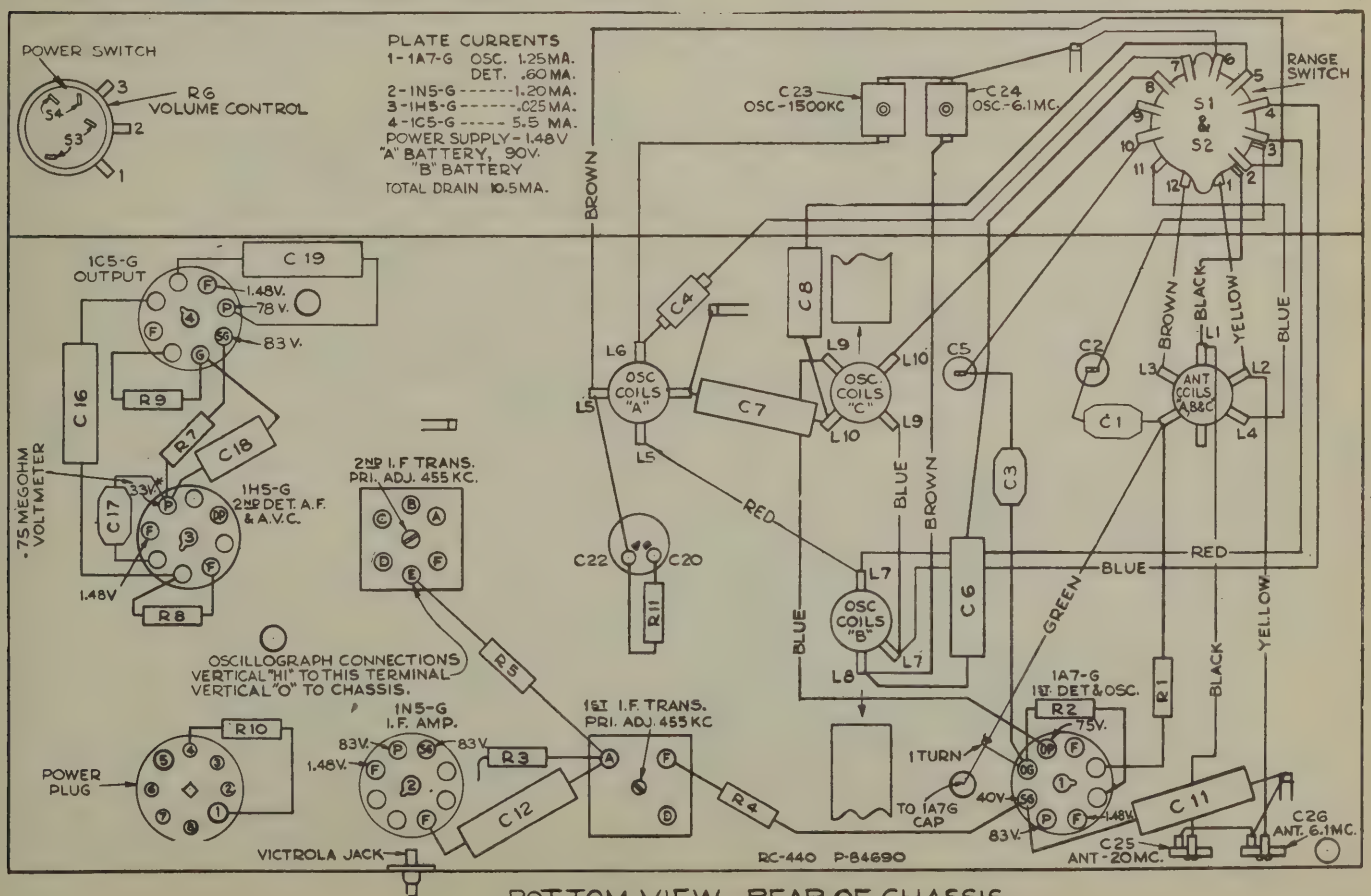

*Model 4QB Top View*

*Use minimum capacity peak if two peaks can be obtained.

**Rock gang slightly for peak output.

†Do not readjust L13 or L14 when test-osc. is applied to 1A7-G grid.

††Use maximum capacity peak if two peaks can be obtained.




BOTTOM VIEW - REAR OF CHASSIS

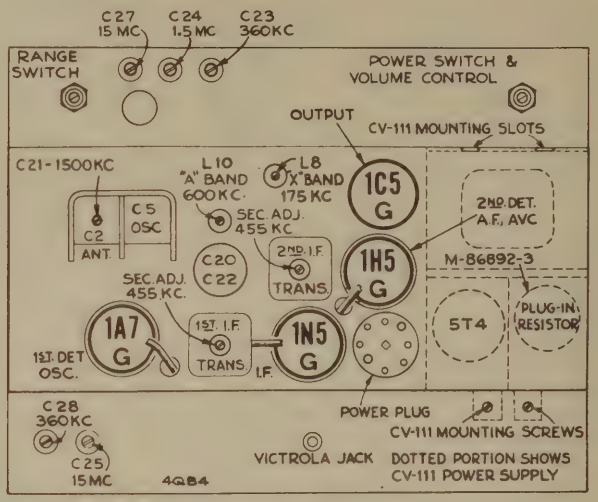
*Model 4QB R-F Wiring Diagram and Socket Voltages*

*Voltages shown above are for battery operation.*

# Model 4QB4 Alignment Procedure

*(Refer to section on "General Alignment Data")*

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 1N5-G I-F grid cap, in series with .01 mfd. | 455 kc | "A" Band, Quiet Point at high-frequency end | L14 and L13 (2nd I-F Trans.) |
| 2 | 1A7-G 1st-Det. grid cap, in series with .01 mfd. | | | L12 and L11 (1st I-F Trans.)† |
| 3 | Antenna lead, in series with 200 mmfd. | 1,500 kc (200 m) | 1,500 kc (152.5°) "A" Band | Preset L10 (osc.) core 5/16-in. out Peak C24 (osc.) and C21 (ant.) |
| 4 | | 600 kc (500 m) | 600 kc (33°) | L10 (osc.)** |
| 5 | | Repeat steps 3 and 4. | | |
| 6 | | 360 kc (833 m) | 360 kc (161°) "X" Band | Preset L8 (osc.) core ¾-in. out Peak C23 (osc.) and C28 (ant.) |
| 7 | | 175 kc (1,710 m) | 175 kc (55°) "X" Band | L8 (osc.)** |
| 8 | | Repeat steps 6 and 7. | | |
| 9 | Antenna lead, in series with 300 ohms | 15 mc | 15 mc (146°) "C" Band | C27 (osc.)* C25 (ant.)†† |
| 10 | Antenna lead, in series with 200 mmfd. | 1,500 kc (200 m) | 1,500 kc (152.5°) "A" Band | C24 (osc.) |



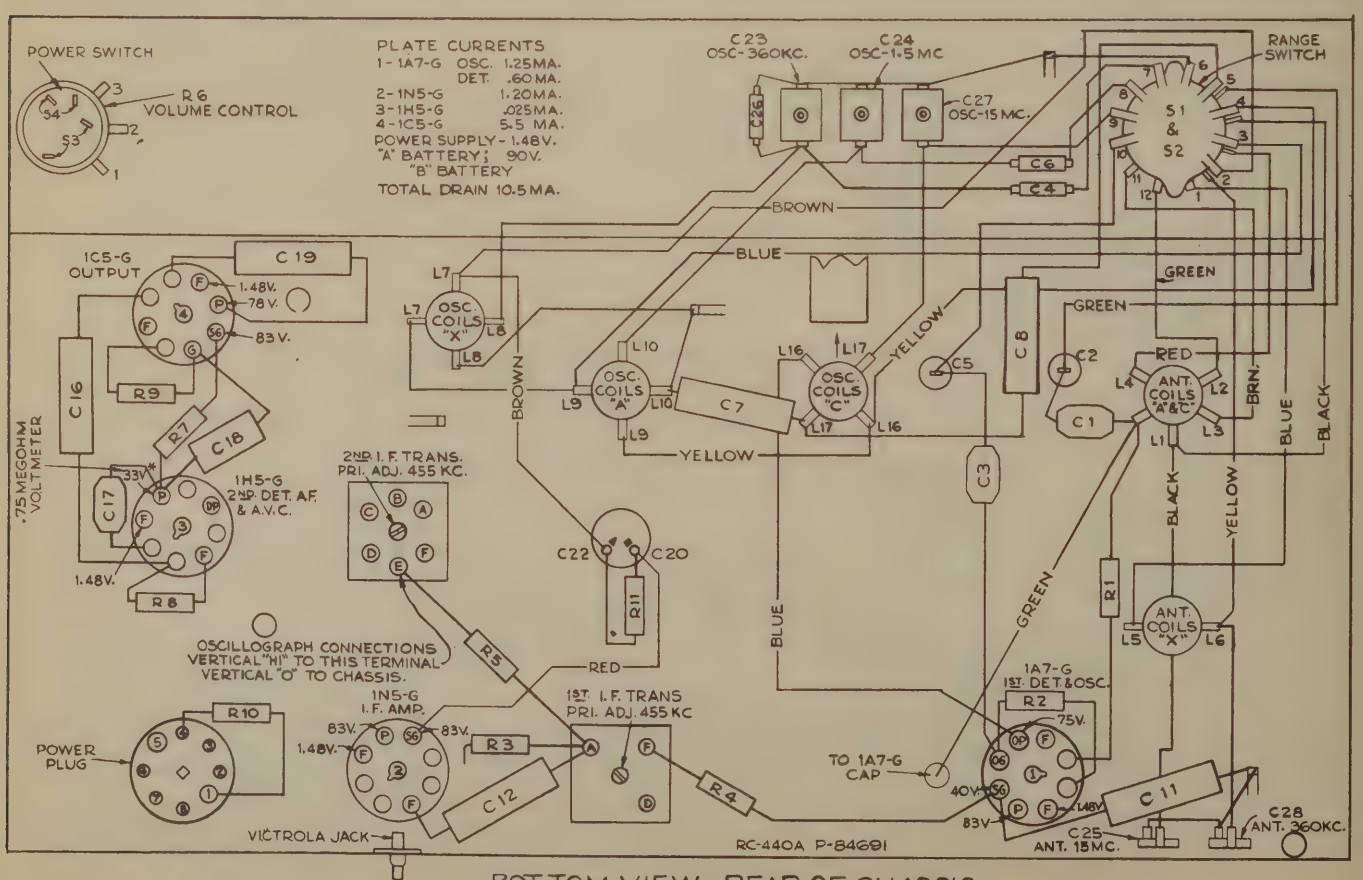

*Model 4QB4 Top View*

*Use minimum capacity peak if two peaks can be obtained.

**Rock gang slightly for peak output.

†Do not readjust L13 or L14 when test-osc. is applied to 1A7-G grid.

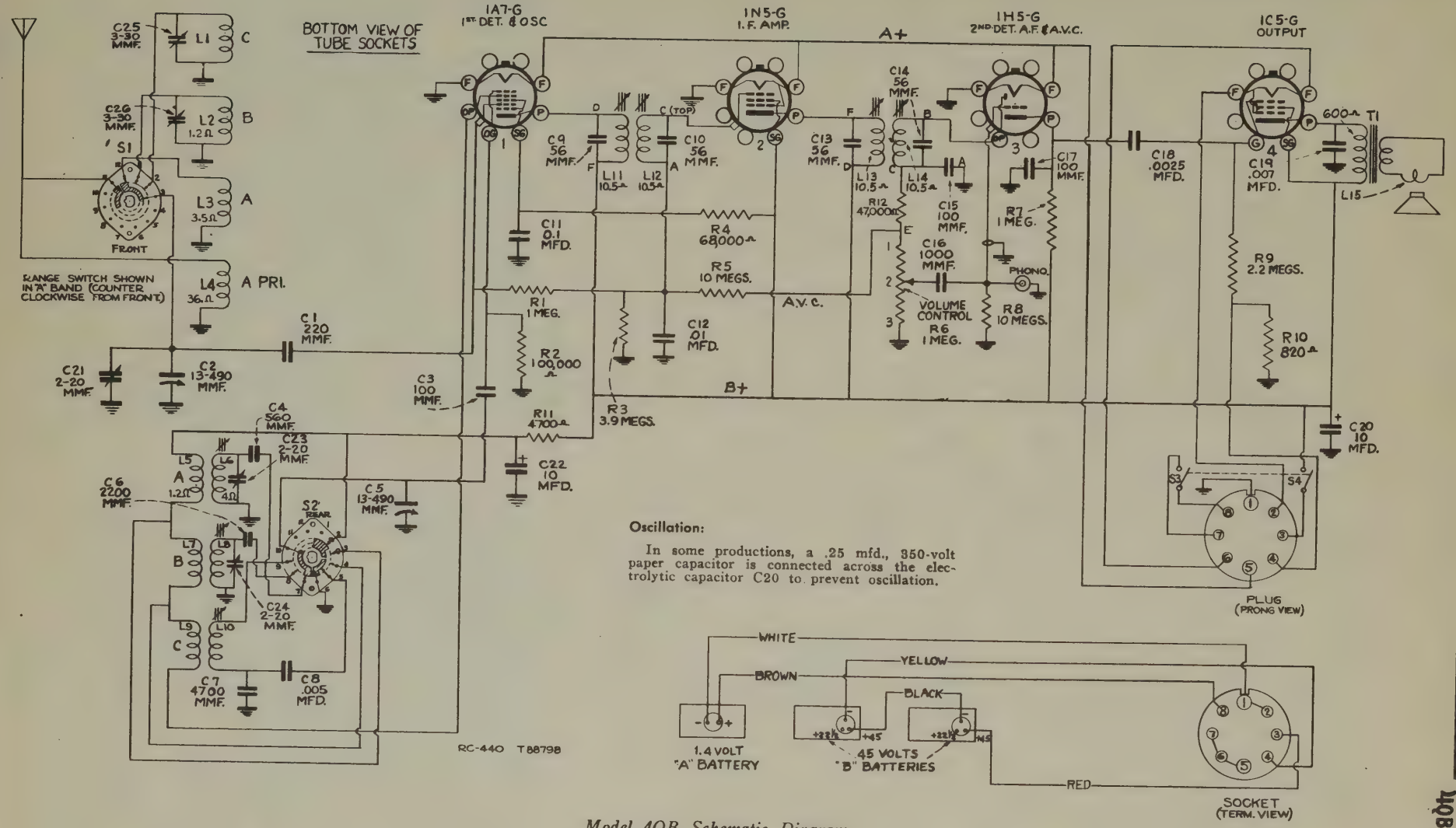
††Use maximum capacity peak if two peaks can be obtained.




BOTTOM VIEW—REAR OF CHASSIS

*Model 4QB4 R-F Wiring Diagram and Socket Voltages*

***Voltages shown above are for battery operation.***



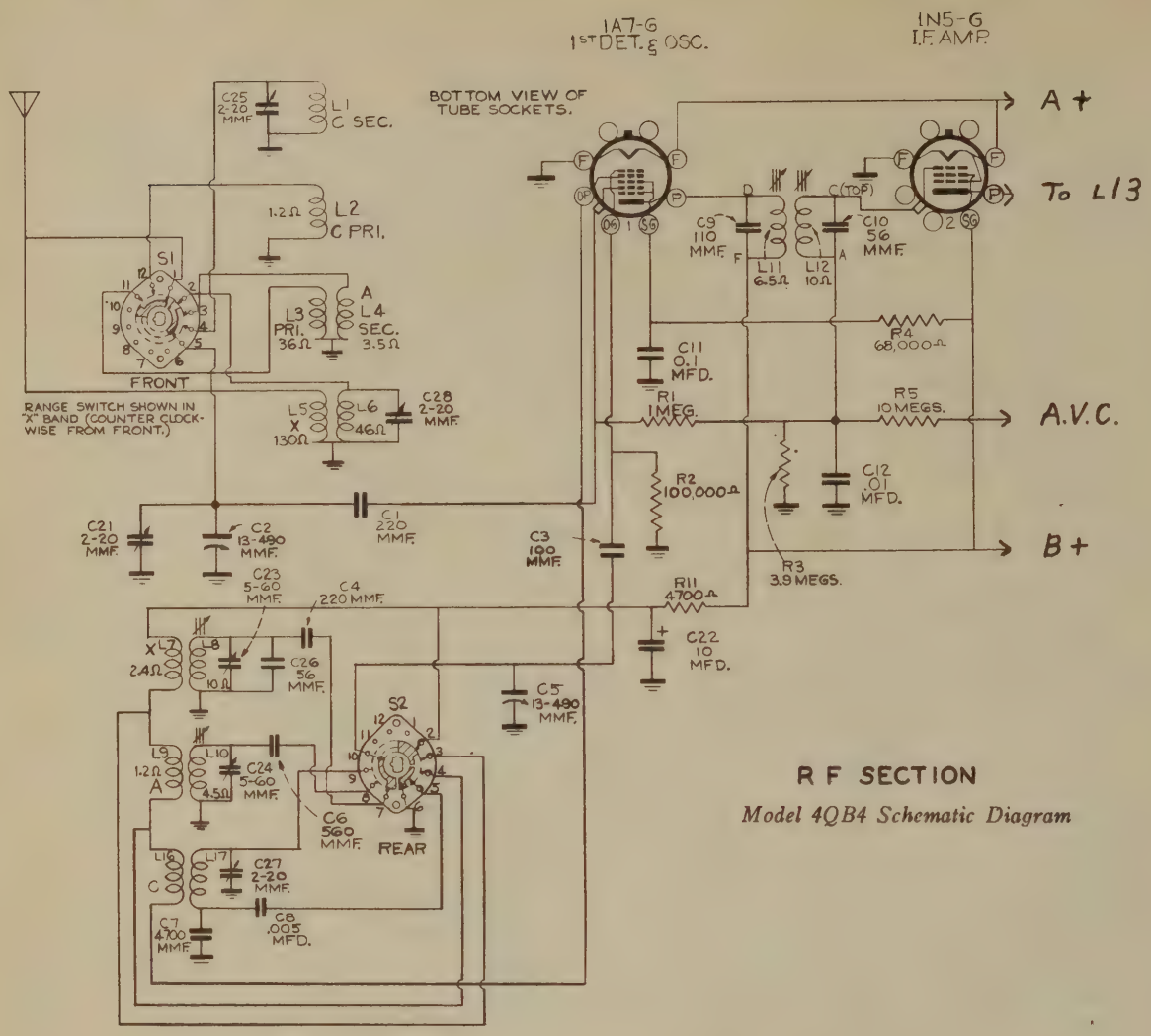

**Oscillation:**

In some productions, a .25 mfd., 350-volt paper capacitor is connected across the electrolytic capacitor C20 to prevent oscillation.

*Model 4QB Schematic Diagram*

**Precautionary Lead Dress:**

1. Dress C3 (100 mmfd.) edgewise to chassis.
2. Dress the 1A7-G grid cap lead clear of chassis.
3. Dress green wire from C2 (antenna section of gang) to range switch away from chassis and other wires.
4. Dress blue lead from terminal "E" of 2nd I-F transformer around terminal "D", away from the 1H5-G and 1C5-G sockets, and close to the chassis.
5. Dress C16 (1,000 mmfd.) from grid of 1H5-G tube to volume control, and the green lead to the 1H5-G grid cap away from other wires.
6. Dress the red wire from the power plug to the power switch on the volume control away from the 1H5-G socket.
7. Blue lead from "C" band oscillator coil to 1A7-G No. 6 contact must be dressed away from chassis.
8. All tube shields must be tight.



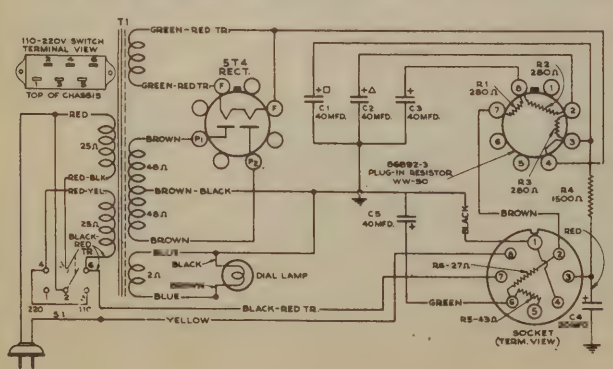

R F SECTION

*Model 4QB4 Schematic Diagram*

## CV-111 A-C Power Supply Unit

Models 4QB and 4QB4 may be operated on 105-125/200-250 volts, 50-60 cycle a-c power supply, by installing a CV-111 power supply unit on the chassis, as follows:

1. Remove the battery cable plug from the power plug on chassis.
2. Set the line power switch (on side of CV-111) to the correct position for the a-c voltage that is to be used.
3. Place the CV-111 on top of the radio chassis as shown in dotted lines in the top view. Press the dial light clip on the projection at low-frequency end of dial assembly. Insert the 8-prong socket (on cable from CV-111) into the power plug on chassis.
4. Fasten the power unit to the chassis. The front of the unit has two projections which fit into slots on the front of the chassis. Two projections on the rear of the unit have holes for fastening to the rear of the chassis with self-tapping screws.
5. **Caution:** Before connecting to the a-c supply, make certain that all tubes are firmly seated in their sockets. Always disconnect the a-c supply before removing or replacing tubes.
6. Reverse the a-c power plug for minimum hum.




*Model CV-111 Power Unit*

## Socket Voltages, with CV-111 Power Supply Unit

**(Line Supply Voltage, 117, or 234 volts)**

| Tube | 1A7-G | | 1N5-G | 1H5-G | 1C5-G |
|---|---|---|---|---|---|
| Function | 1st-Det. | Osc. | I. F. | 2nd Det., A. F. | Output |
| Filament Voltage | 1.3 | | 1.3 | 1.3 | 1.28 |
| Plate Voltage | 95 | 85 | 95 | 40** | 92 |
| Screen Voltage | 45 | | 95 | | 95 |
| Plate Mils. | 0.4 | 1.5 | 1.5 | .03 | 9 |
| Screen Mils. | .7 | | .35 | | 1.75 |
| Bias | | | | | 6.1 |

Total "B" current, 15 mils.
Total filament current, 146 mils.
**With 750,000 ohm voltmeter.

# Replacement Parts

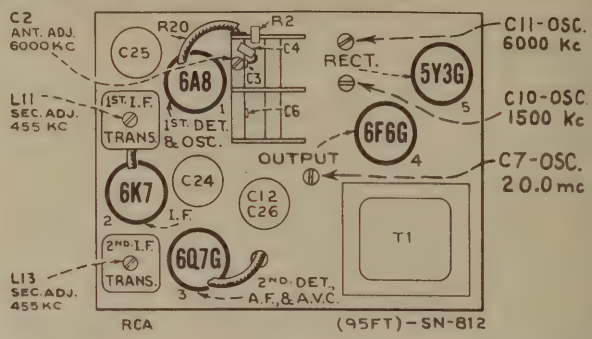
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | **(RC-440, Model 4QB)** |
| | **(RC-440A, Model 4QB4)** |
| 32832 | Bracket—Drive bracket pulleys, tuning knob shaft complete |
| 32834 | Bracket—Pulley and bracket |
| 32830 | Capacitor—Trimmer capacitor—2 sections 2-20 mmfd. each. (Model 4QB C23, C24) (Model 4QB4 C25, C28) |
| 31292 | Capacitor—Trimmer capacitor—2 sections 3-30 mmfd. each (Model 4QB C25, C26) |
| 33788 | Capacitor—Trimmer capacitor—3 sections 2 of 5-60 mmfd. each and 1 section of 2-20 mmfd. each. (Model 4QB4 C23, C24, C27) |
| 12723 | Capacitor—56 mmfd. (Model 4QB4 C26) |
| 30949 | Capacitor—56 mmfd. (C9, C10, C13, C14 Model 4QB) (C10, C13, C14, Model 4QB4) |
| 12629 | Capacitor—56 mmfd. (Model 4QB4 C10) |
| 12720 | Capacitor—100 mmfd. (C3, C17) |
| 14262 | Capacitor—109 mmfd. (Model 4QB4 C9) |
| 32238 | Capacitor—110 mmfd. (C15) |
| 12694 | Capacitor—220 mmfd. (C1, C4) (C4 in Model 4QB4 only) |
| 31433 | Capacitor—560 mmfd. (C4 in Model 4QB, C6 in Model 4QB4) |
| 12635 | Capacitor—1,000 mmfd. (C16) |
| 12951 | Capacitor—2,200 mmfd. (Model 4QB C6) |
| 31399 | Capacitor—4,700 mmfd. (C7) |
| 14393 | Capacitor—.01 mfd. (C30) |
| 34459 | Capacitor—.0025 mfd. (C18) |
| 33584 | Capacitor—.005 mfd. (C8) |
| 5148 | Capacitor—.007 mfd. (C19) |
| 4937 | Capacitor—.01 mfd. (C12) |
| 4839 | Capacitor—0.1 mfd. (C11) |
| 33790 | Capacitor—Comprising 2 sections of 10 mfd. each (C20, C22) |
| 32821 | Coil—Antenna coil—A, B, C bands—(Model 4QB L1, L2, L3, L4) |
| 32706 | Coil—Antenna coil—A, C band (Model 4QB4 L1, L2, L3, L4) |
| 32823 | Coil—Antenna coil—X band (Model 4QB4 L5, L6) |
| 32148 | Coil—Oscillator coil—"A" band (Model 4QB L5, L6) (Model 4QB4 L9, L10) |
| 33784 | Coil—Oscillator coil—"B" band (Model 4QB L7, L8) |
| 33785 | Coil—Oscillator coil—"C" band (Model 4QB L9, L10) |
| 33787 | Coil—Oscillator coil—"C" band (Model 4QB4 L16, L17) |
| 33786 | Coil—Oscillator coil—"X" band (Model 4QB4 L7, L8) |
| 32817 | Condenser—Variable tuning condenser (C2, C5, C21) |
| 33780 | Control—Volume control and switch (R6, S3, S4) |
| 32634 | Cord—Condenser drive cord |
| 32835 | Cord—Indicator drive cord |
| 32713 | Core—Core and stud for oscillator coil (Model 4QB) ("B" band) |
| 32835 | Drum—Drive cord drum |
| 5119 | Plug—3-contact female for speaker cable |
| 30588 | Plug—4-contact male for power cable |
| 33969 | Plug—8-contact female for power cable |
| 33789 | Plug—8-prong male power input plug |
| 14076 | Resistor—820 ohms, ½ watt (R10) |
| 30146 | Resistor—4,700 ohms, ½ watt (R11) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R12) |
| 13715 | Resistor—68,000 ohms, ½ watt (R4) |
| 14560 | Resistor—100,000 ohms, ½ watt (R2) |
| 13730 | Resistor—1 meg., ½ watt (R1, R7) |
| 12679 | Resistor—2.2 meg., ½ watt (R9) |
| 13167 | Resistor—3.9 meg., ½ watt (R3) |
| 13601 | Resistor—10 meg., ½ watt (R5, R8) |
| 30340 | Retainer—Drive bracket shaft retainer |
| 32833 | Shaft—Tuning knob shaft retainer and pulley |
| 14278 | Socket—Phonograph input socket and plate |
| 31319 | Socket—Tube socket |
| 31418 | Spring—Spring for indicator drive and condenser drive cords |
| 33781 | Switch—Range switch (Model 4QB S1, S2) |
| 33782 | Switch—Range switch (Model 4QB4 S1, S2) |
| 32263 | Transformer—First i-f transformer (Model 4QB L11, L12, C9, C10) |
| 14261 | Transformer—First i-f transformer (Model 4QB4 L11, L12, C9, C10) |
| 32825 | Transformer—Second i-f transformer (L13, L14, C13, C14, C15, R12) |
| | **SPEAKER ASSEMBLIES** |
| | **(84556-2)** |
| 33804 | Cone—Cone complete with voice coil, center suspension and dust screen—centered and assembled in metal housing (L15) |
| 5118 | Plug—3-contact male plug for speaker |
| 33791 | Speaker—Complete |
| 33805 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32845 | Bracket—Dial mounting bracket and lamp bracket assembly—less pointer and pointer slide rods |
| 32837 | Dial—Glass dial scale (Model 4QB) |
| 33844 | Dial—Glass dial scale (Model 4QB4) |
| 34340 | Knob—Range switch knob—black |
| 34341 | Knob—Range switch knob—ivory |
| 34342 | Knob—Range switch knob—maroon |
| 33085 | Knob—Tuning knob—black |
| 32839 | Knob—Tuning knob—brown |
| 33091 | Knob—Tuning knob—ivory |
| 33093 | Knob—Tuning knob—maroon |
| 33943 | Knob—Volume control knob—black |
| 33944 | Knob—Volume control knob—ivory |
| 33945 | Knob—Volume control knob—maroon |
| 32208 | Plug—2-contact male plug for battery cable |
| 12827 | Plug—3-contact male plug for battery cable ("B" leads) |
| 30568 | Plug—4-contact male plug for battery cable |
| 32847 | Pointer—Dial pointer, carriage and clip |
| 32846 | Rod—Pointer slide rod |
| 30567 | Socket—4-contact female socket for battery cable |
| 33969 | Socket—8-contact female socket for battery cable |
| 14270 | Spring—Retaining spring for knobs |
| | **CV-111 POWER SUPPLY UNIT** |
| 33813 | Ballast—Ballast resistor tube—Type 86892-3 (R1, R2, R3) |
| 33968 | Capacitor—Electrolytic—1 section of 20 mfd. and 1 section of 40 mfd. (C4, C5) |
| 33810 | Capacitor—Electrolytic, 3 sections 40 mfd. each (C1, C2, C3) |
| 11891 | Lamp—Pilot lamp |
| 33813 | Resistor—Ballast resistor tube—Type 86892-3 (R1, R2, R3) |
| 12453 | Resistor—27 ohms, ½ watt (R6) |
| 33970 | Resistor—43 ohms, flexible (R5) |
| 14499 | Resistor—1,500 ohms, ½ watt (R4) |
| 33969 | Socket—8-contact female socket for power supply cable |
| 31364 | Socket—Pilot lamp socket |
| 31319 | Socket—Tube socket |
| 32827 | Switch—Voltage change switch (S1) |
| 33783 | Transformer—Power transformer 105-120 and 200-240 volts, 50-60 cycle (T1) |
| 33813 | Tube—Ballast resistor tube—Type 86892-3 (R1, R2, R3) |

# MODEL 5Q1

FORMERLY MODEL 95FT

## Five-Tube, Three-Band, A-C, Superheterodyne Receiver




L8, 600 kc osc. adjustment is accessible through hole in rear apron

*Radiotron, Component Part, and Trimmer Locations*

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540- 1,720 kc |
| "Medium Wave" (B) | 2,300- 7,000 kc |
| "Short Wave" (C) | 7,000-22,000 kc |

R-F ALIGNMENT FREQUENCIES

| | |
|---|---|
| "Medium Wave" (B) | 6,000 kc (osc., ant.) |
| "Short Wave" (C) | 20,000 kc (osc.) |
| "Standard Broadcast" (A) | 600 kc (osc.), 1,500 kc (osc.) |

Intermediate Frequency ..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8 ..... First Detector-Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6Q7-G ..... Second Detector—A.V.C.—Audio Voltage Amplifier
(4) RCA-6F6-G ..... Audio Power Amplifier
(5) RCA-5Y3-G ..... Full-Wave Rectifier

Pilot Lamps (2) .. Mazda No. 46, 6.3 volts, 0.25 amp.

POWER SUPPLY RATINGS

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 75 watts |
| Rating B | 105-125 volts, 25-60 cycles, 75 watts |
| Rating C | 105-125/200-250 volts, 50-60 cycles, 75 watts |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 2.2 watts |
| Maximum | 4.5 watts |

LOUDSPEAKER

Type ..... 6-inch electrodynamic

V. C. Impedance ..... { 84091-1, 84001-3 } 2.6 ohms at 400 cycles
{ 84091-2, 84001-6 } 4.7 ohms at 400 cycles

**Precautionary Lead Dress.**—(1) Keep leads from C1 as short as possible. (2) Dress yellow and green leads from range selector to oscillator coil between front apron and range selector. (3) Dress blue lead from oscillator coil to oscillator plate away from other parts. Maintain original length and size of the following: (4) bus lead from antenna coil L1 to range selector and (5) lead from oscillator coil to chassis.

### Alignment Procedure

With the gang tuning-condenser plates in full-mesh position, adjust the pointer to the low-frequency (end) calibration mark on the dial scale. The pointer is soldered in place on the drive cable.

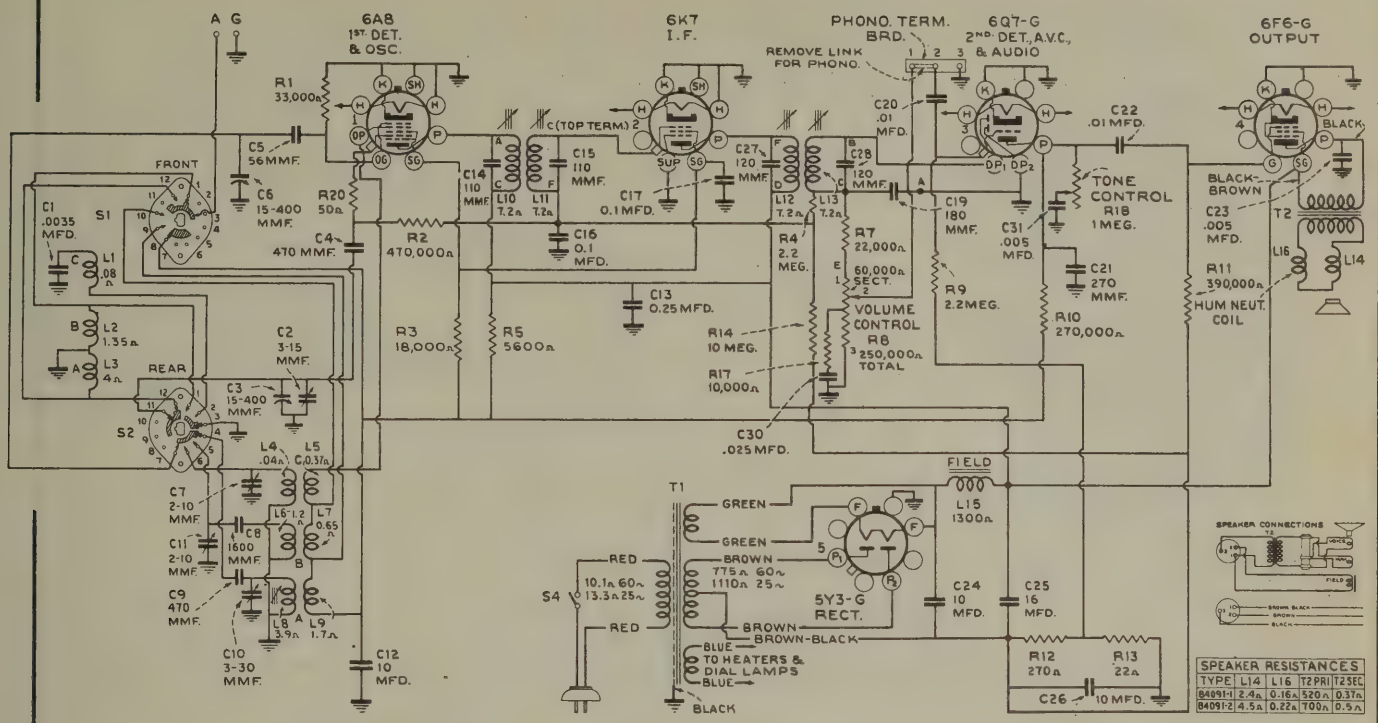
| Order of Alignment | Test Oscillator: Connection to Receiver | Test Oscillator: Dummy Antenna | Test Oscillator: Frequency Setting | Range Selector | Receiver Dial Setting | Circuit to Adjust | Adjustment Symbols | Adjust to Obtain |
|---|---|---|---|---|---|---|---|---|
| 1 | 6K7 I-F Grid Cap | .001 Mfd. | 455 kc | "A" Left | No Signal 550-750 kc | 2nd I-F Trans. | L12 and L13 | Max. (peak) |
| 2 | 6A8 Det. Grid Cap | .001 Mfd. | 455 kc | "A" | No Signal 550-750 kc | 1st I-F Trans. | L10 and L11 | Max. (peak) |
| 3 | Ant. Term. | 300 Ohms | 6,000 kc | "B" Center | 6,000 kc | "B" Osc. | C11 | Max. (peak)* |
| 4 | Ant. Term. | 300 Ohms | 6,000 kc | "B" | 6,000 kc | "B" Ant. | C2 | Max. (peak)† |
| 5 | Ant. Term. | 300 Ohms | 20,000 kc | "C" Right | 20,000 kc | "C" Osc. | C7 | Max. (peak)‡ |
| 6 | Ant. Term. | 200 Mmfd. | 600 kc | "A" Left | 600 kc | "A" L-F Osc. | L8 | Max. (peak) |
| 7 | Ant. Term. | 200 Mmfd. | 1,500 kc | "A" | 1,500 kc | "A" H-F Osc. | C10 | Max. (peak) |
| 8 | Ant. Term. | 200 Mmfd. | 600 kc | "A" | 600 kc | "A" L-F Osc. | L8 | Max. (peak) |
| 9 | Ant. Term. | 200 Mmfd. | 1,500 kc | "A" | 1,500 kc | "A" H-F Osc. | C10 | Max. (peak) |

* Use minimum capacity peak if two peaks can be obtained.

† After this adjustment, check for image signal by shifting receiver dial to 5.09 mc.

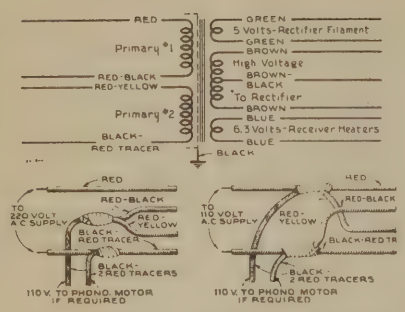
‡ Use maximum capacity peak if two peaks can be obtained. After this adjustment, check for image signal by shifting receiver dial to 20.91 mc.

Note that the heterodyne oscillator tracks above the signal frequency on bands "A" and "B," and below the signal frequency on band "C."

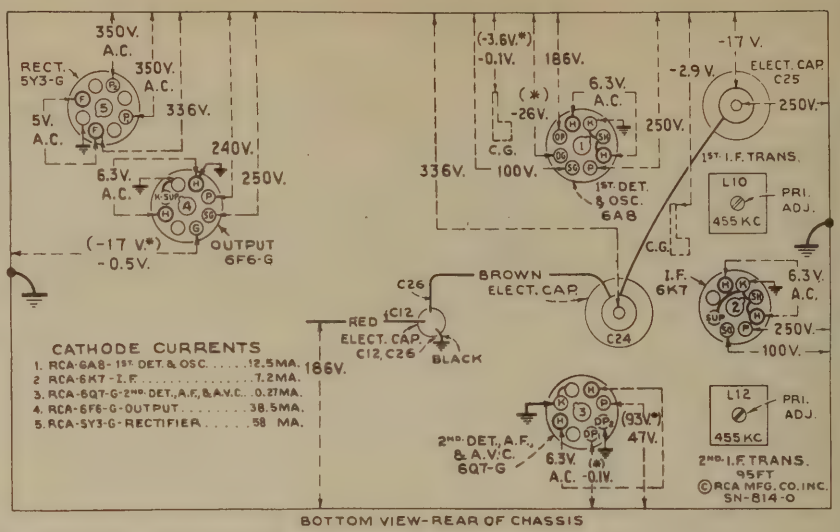



*Schematic Circuit Diagram*

*Component Part Location and R-F Wiring Diagram*




Schematic and primary lead connections for 110-220 volt power transformer (Stock No. 30607). Resistance of each primary winding, 10 ohms: High-voltage secondary winding, 386 ohms total.




*Radiotron Socket Voltages and Trimmer Locations*

* Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.

# REPLACEMENT PARTS

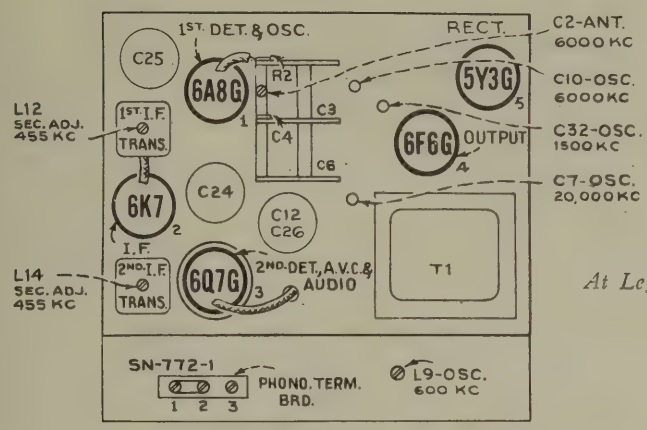
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 14380 | Arm—Hum and arm for operating band indicator shutter—fastens on range switch shaft |
| 14352 | Belt—Station selector drive belt |
| 13216 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph terminal board |
| 12607 | Cap—Top shield cap for first i-f transformer |
| 12581 | Cap—Top shield cap for second i-f transformer |
| 11350 | Cap—Grid contact cap |
| 12723 | Capacitor—56 mmfd. (C5) |
| 14262 | Capacitor—110 mmfd. (C14, C15) |
| 12404 | Capacitor—120 mmfd. (C27, C28) |
| 12406 | Capacitor—180 mmfd. (C19) |
| 12488 | Capacitor—270 mmfd. (C21) |
| 30433 | Capacitor—470 mmfd. (C4, C9) |
| 30592 | Capacitor—1,600 mmfd. (C8) |
| 30303 | Capacitor—.0035 mfd. (C1) |
| 4870 | Capacitor—.025 mfd. (C30) |
| 4838 | Capacitor—.005 mfd. (C23, C31) |
| 14393 | Capacitor—.01 mfd. (C20, C22) |
| 4839 | Capacitor—0.1 mfd. (C16, C17) |
| 12484 | Capacitor—0.25 mfd. (C13) |
| 11203 | Capacitor—10 mfd. |
| 30577 | Capacitor Pack—Comprising two sections each 10 mfd. |
| 5212 | Capacitor—16 mfd. (C25) |
| 4358 | Clamp—Mounting clamp for capacitor pack Stock No. 30577 |
| 30578 | Coil—Antenna coil (L1, L2, L3) |
| 30579 | Coil—Oscillator coil (L4, L5, L6, L7, L8, L9) |
| 30573 | Condenser—2-gang variable tuning condenser (C2, C3, C6) |
| 30580 | Condenser—3-gang mica trimmer—two sections each 2-10 mmfd., one section 3-30 mmfd. (C7, C10, C11) |
| 30586 | Cord—Station-selector indicator pointer cord |
| 12800 | Core—Adjustable core and stud for oscillator coil |
| 12006 | Core—Adjustable core and stud for i-f transformer |
| 30589 | Dial—Station-selector dial scale |
| 30581 | Disc—Band indicator disc with celluloid window |
| 30572 | Drive—Vernier drive shaft and pinion gear for variable condenser |
| 30584 | Drum—Station-selector drive-cord drum with set screws |
| 30583 | Indicator—Station-selector indicator pointer and holder assembly |
| 5226 | Lamp—Dial lamp |
| 30587 | Pulley—Drive-belt pulley for condenser shaft |
| 14636 | Pulley—Drive-belt idler pulley |
| 14525 | Resistor—22 ohms, ½ watt (R13) |
| 14653 | Resistor—50 ohms, flexible type, ½ watt (R20) |
| 13819 | Resistor—270 ohms, wire wound, 1.1 watt (R12) |
| 11298 | Resistor—5,600 ohms, 1 watt (R5) |
| 14559 | Resistor—10,000 ohms, ½ watt (R17) |
| 30151 | Resistor—18,000 ohms, 1 watt (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12199 | Resistor—270,000 ohms, ½ watt (R10) |
| 13005 | Resistor—390,000 ohms, 1/10 watt (R11) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R2) |
| 12679 | Resistor—2.2 meg., ½ watt (R4, R9) |
| 13601 | Resistor—10 meg., ½ watt (R14) |
| 14887 | Retainer—Band indicator disc retainer |
| 14343 | Ring—Retaining ring for range switch shaft |
| 14350 | Screw—No. 8-32 x 3/16 in. square head set screw for drum Stock No. 30584, arm Stock No. 14380, and pulley Stock No. 30587 |
| 14340 | Shaft—Drive pulley and knob shaft—fastens on range switch shaft |
| 12008 | Shield—I-f transformer shield can |
| 11196 | Socket—8-contact Radiotron socket |
| 14114 | Socket—Dial lamp socket |
| 12007 | Spring—Retaining spring for core Stock No. 12006 |
| 30585 | Spring—Tension spring for pointer cord |
| 30588 | Spring—Tension spring for idler pulley |
| 30576 | Switch—Range switch (S1, S2) |
| 30574 | Tone Control and power switch (R18, S4) |
| 14376 | Transformer—First i-f transformer (L10, L11, C14, C15) |
| 14308 | Transformer—Second i-f transformer (L12, L13, C19, C27, C28, R7) |
| 30571 | Transformer—Power transformer, 105-125 volts, 25-60 cycles (T1) |
| 30607 | Transformer—Power transformer, 105-125 and 200-250 volts, 50-60 cycles (T1) |
| 30575 | Volume Control (R8) |
| | **REPRODUCER ASSEMBLIES** |
| 13677 | Cone—Reproducer cone and dust cap (for speaker marked 84091-1 or 84001-3) (L14) |
| 14934 | Cone—Reproducer cone and dust cap (for speaker marked 84091-2 or 84001-6) (L14) |
| 14613 | Reproducer complete—(marked 84001-3 or 6 but interchangeable with speaker marked 84091-1 or 2) |
| 14615 | Transformer—Output transformer (for speaker marked 84091-1 or 84001-3) (T2) |
| 14935 | Transformer—Output transformer (for speaker marked 84091-2 or 84001-6) (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30593 | Escutcheon—Station selector dial escutcheon and crystal |
| 11771 | Foot—Rubber foot for cabinet |
| 14359 | Knob—Station selector knob |
| 14269 | Knob—Tone-control, volume-control, or range-switch knob |
| 14267 | Screw—Chassis mounting screw and washer assembly |
| 14270 | Spring—Retaining spring for knob Stock No. 14269 |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |

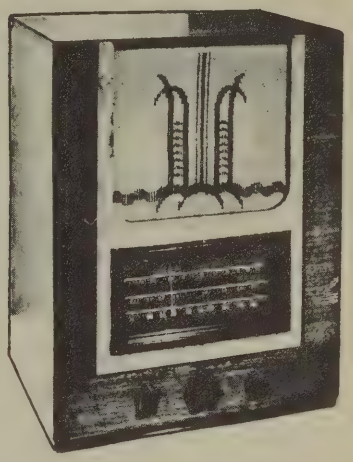
# MODEL 5Q2

## Chassis No. RC-325-C

## Five-Tube, Three-Band, A-C, Superheterodyne Receiver




*At Left—Tube and Trimmer Locations*



## Electrical Specifications

FREQUENCY RANGES
"Standard Broadcast" (A)..... 540-1,550 kc (555-193 m)
"Medium Wave" (B)..... 2.3-7.0 mc (130-42.8 m)
"Short Wave" (C)..... 7.0-22.0 mc (42.8-13.6 m)
INTERMEDIATE FREQUENCY..... 455 kc
RADIOTRON COMPLEMENT
(1) RCA-6A8-G..... First Detector—Oscillator
(2) RCA-6K7..... Intermediate Amplifier
(3) RCA-6Q7-G.. Second Detector, A.V.C., and A-F Amp.
(4) RCA-6F6-G..... Power Output
(5) RCA-5Y3-G..... Full-Wave Rectifier

PILOT LAMPS (2)..... Mazda 44, 6.3 volts, 0.25 amp.
POWER OUTPUT RATING
Undistorted..... 2.5 watts
Maximum..... 4.5 watts
LOUDSPEAKER (RL-63F-1)
Type..... 8-inch Electrodynamic
V.C. Impedance..... 2.2 ohms at 400 cycles
POWER SUPPLY RATINGS
Rating A..... 105-125 volts, 50-60 cycles, 75 watts
Rating B..... 105-125 volts, 25-60 cycles, 75 watts
Rating C.... 105-125/200-250 volts, 50-60 cycles, 75 watts

## Alignment Procedure

**Pre-setting Dial.**—With the gang condenser in full mesh, the dial pointer should be in line with the left-hand end of the dial scales. The pointer is soldered to the drive cable.

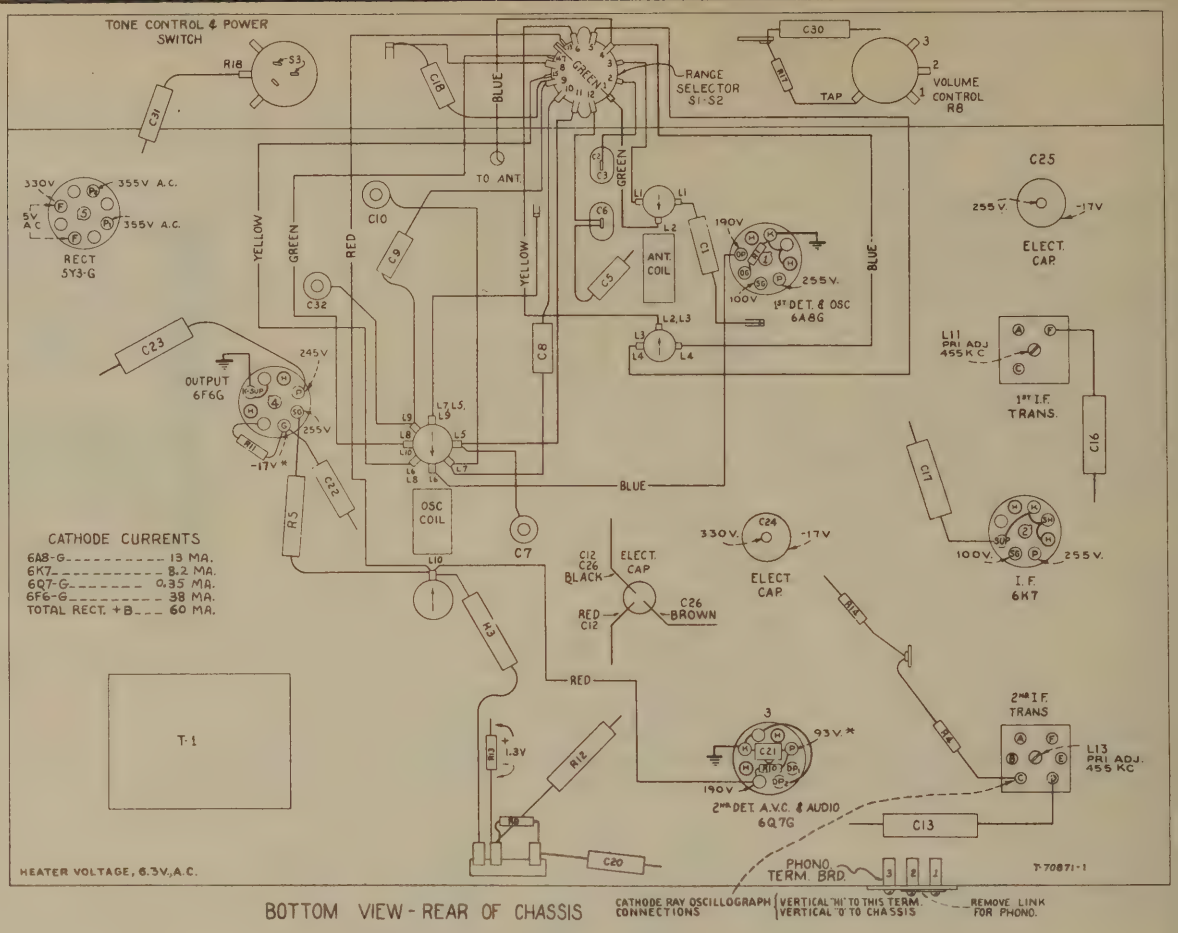
| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L13 and L14 (2nd I-F Trans.) |
| 2 | 6A8-G det. grid cap, in series with .01 mfd. | 455 kc | | L11 and L12 (1st I-F Trans.) |
| 3 | Antenna Terminal in series with 300 ohms | 6 mc | 6 mc "B" band | C10 (osc.) * C2 (ant.) † |
| 4 | Antenna Terminal in series with 300 ohms | 20 mc | 20 mc "C" band | C7 (osc.) ** |
| 5 | Antenna Terminal in series with 200 mmf. | 600 kc | 600 kc "A" band | L9 (osc.) |
| 6 | Antenna Terminal in series with 200 mmf. | 1,500 kc | 1,500 kc "A" band | C32 (osc.) * |
| 7 | Repeat steps 5 and 6. | | | |

* Use **minimum** capacity peak if two peaks can be obtained.

† After adjusting C2, check to determine that C10 has been adjusted to the correct peak by tuning the receiver to approximately 5.09 mc, where a weaker signal should be received.

** Use **maximum** capacity peak if two peaks can be obtained. Check to determine that C7 has been adjusted to the correct peak by tuning the receiver to approximately 20.91 mc, where a weaker signal should be received.

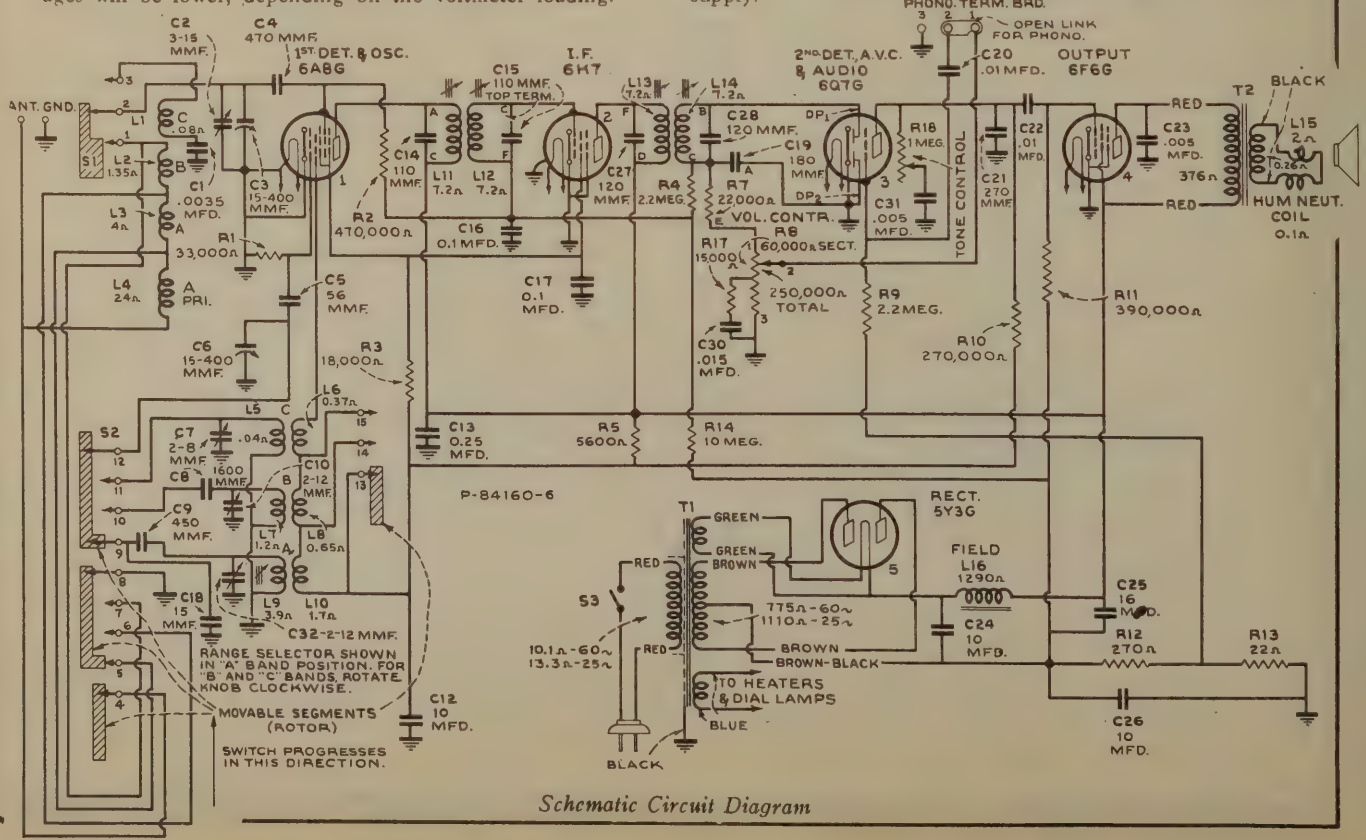
**NOTE:** The oscillator tracks 455 kc **above** the signal on **"A"** and **"B"** bands, and 455 kc **below** the signal on **"C"** band.



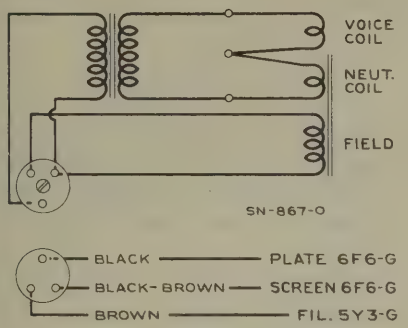

*R-F Wiring Diagram and Socket Voltages*

*NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

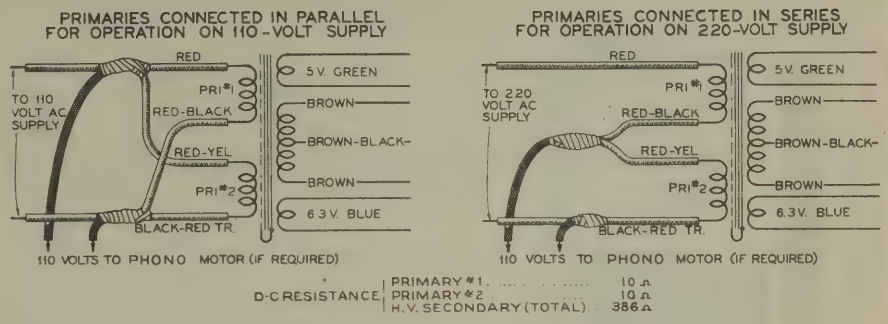
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 115-volt a-c supply.




*Schematic Circuit Diagram*




*Connections and Colors of Speaker and Cable*




*Connections of Universal Power Transformer Primary for 220 and 110 Volts*

# REPLACEMENT PARTS

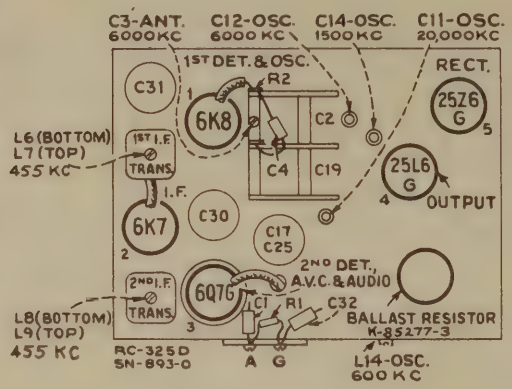
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 14380 | Arm—Hub and arm for operating band indicator shutter—fastens on range switch shaft |
| 14352 | Belt—Station selector drive belt |
| 13216 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph terminal board |
| 12607 | Cap—Top shield cap for first i-f transformer |
| 12581 | Cap—Top shield cap for second i-f transformer |
| 30314 | Cap—Grid contact cap |
| 12807 | Capacitor—Adjustable trimmer (short) (C7) |
| 12714 | Capacitor—Adjustable trimmer (medium) (C32, C10) |
| 12896 | Capacitor—15 mmfd. (C18) |
| 12723 | Capacitor—56 mmfd. (C5) |
| 14262 | Capacitor—110 mmfd. (C14, C15) |
| 12404 | Capacitor—120 mmfd. (C27, C28) |
| 14712 | Capacitor—180 mmfd. (C19) |
| 12488 | Capacitor—270 mmfd. (C21) |
| 12812 | Capacitor—450 mmfd. (C9) |
| 30433 | Capacitor—470 mmfd. (C4) |
| 30592 | Capacitor—1,600 mmfd. (C8) |
| 30303 | Capacitor—.0035 mfd. (C1) |
| 4838 | Capacitor—.005 mfd. (C23, C31) |
| 14393 | Capacitor—.01 mfd. (C20, C22) |
| 11315 | Capacitor—.015 mfd. (C30) |
| 4839 | Capacitor—0.1 mfd. (C16, C17) |
| 12484 | Capacitor—0.25 mfd. (C13) |
| 11203 | Capacitor—10 mfd. |
| 30577 | Capacitor Pack—Comprising two sections, each 10 mfd. |
| 5212 | Capacitor—16 mfd. (C25) |
| 4358 | Clamp—Mounting clamp for capacitor pack, Stock No. 30577 |
| 30621 | Coil—Antenna coil (L1, L2, L3, L4) |
| 30579 | Coil—Oscillator coil (L5, L6, L7, L8, L9, L10) |
| 30573 | Condenser—2-gang variable tuning condenser (C2, C3, C6) |
| 30586 | Cord—Station selector indicator pointer cord |
| 12800 | Core—Adjustable core and stud for oscillator coil |
| 12006 | Core—Adjustable core and stud for i-f transformers |
| 31741 | Dial—Station selector dial scale (glass) |
| 30581 | Disc—Band indicator disc with celluloid window |
| 30572 | Drive—Vernier drive shaft and pinion gear for variable condenser |
| 30584 | Drum—Station-selector drive-cord drum with set screws |
| 30583 | Indicator—Station-selector indicator pointer and holder assembly |
| 11891 | Lamp—Dial lamp |
| 14028 | Nut—Jamb nut for adjustable capacitor, Stock Nos. 12807 and 12714 |
| 30587 | Pulley—Drive-belt pulley for condenser shaft |
| 14636 | Pulley—Drive-belt idler pulley |
| 14525 | Resistor—22 ohms, ½ watt (R13) |
| 13819 | Resistor—270 ohms, wire-wound, 1.1 watt (R12) |
| 13714 | Resistor—5,600 ohms, 1 watt (R5) |
| 12695 | Resistor—15,000 ohms, ½ watt (R17) |
| 30151 | Resistor—18,000 ohms, 1 watt (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12199 | Resistor—270,000 ohms, ½ watt (R10) |
| 13005 | Resistor—390,000 ohms, 1/10 watt (R11) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R2) |
| 12679 | Resistor—2.2 meg., ½ watt (R4, R9) |
| 13601 | Resistor—10 meg., ½ watt (R14) |
| 14887 | Retainer—Band indicator disc retainer |
| 14343 | Ring—Retaining ring for range switch shaft |
| 14350 | Screw—No. 8-32 x 3/16-inch square-head set screw for drum, Stock No. 30584; arm, Stock No. 14380, and pulley, Stock No. 30587 |
| 14340 | Shaft—Drive pulley and knob shaft—fastens on range-switch shaft |
| 3682 | Shield—Radiotron shield |
| 12008 | Shield—I-f transformer shield can |
| 5119 | Socket—3-contact speaker cable socket |
| 11196 | Socket—8-contact tube socket |
| 14114 | Socket—Dial lamp socket |
| 12007 | Spring—Retaining spring for core, Stock No. 12006 |
| 30585 | Spring—Tension spring for pointer cord |
| 30588 | Spring—Tension spring for idler pulley |
| 30620 | Switch—Range switch (S1, S2) |
| 30574 | Tone control and power switch (R18, S3) |
| 14376 | Transformer—First i-f transformer (L11, L12, C14, C15) |
| 14308 | Transformer—Second i-f transformer (L13, L14, C19, C27, C28, R7) |
| 30571 | Transformer—Power transformer, 105-125 volts, 25-60 cycles (T1) |
| 30607 | Transformer—Power transformer, 105-125 and 200-250 volts, 50-60 cycles (T1) |
| 30575 | Volume Controls (R8) |
| | **SPEAKER ASSEMBLIES (RL-63F-1)** |
| 14356 | Board—3-contact speaker terminal board |
| 13866 | Cap—Cone center dust cap |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L17) |
| 12642 | Cone—Speaker cone and dust cap (L15) |
| 5118 | Plug—3-contact male plug for speaker |
| 14360 | Speaker—Complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 14355 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31742 | Escutcheon—Dial escutcheon and crystal |
| 13907 | Knob—Tone control, volume control or range switch knob |
| 31743 | Knob—Station selector knob |
| 14267 | Screw—Chassis mounting screw and washer assembly |
| 11349 | Spring—Retaining spring for knob, Stock No. 13907 |
| 4982 | Spring—Retaining spring for knob, Stock No. 31743 |

# MODEL 5Q2X

## Chassis No. RC-325-D

## Five-Tube, Three-Band, AC-DC, Superheterodyne Receiver




**CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.**

*At Left—Tube and Trimmer Locations*

## Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)..... 540-1,550 kc (555-193 m)
"Medium Wave" (B)..... 2.3-7.0 mc (130-42.8 m)
"Short Wave" (C)..... 7.0-22.0 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6K8..... First Detector—Oscillator
(2) RCA-6K7..... I-F Amplifier
(3) RCA-6Q7-G.. Second Detector, A.V.C., and A-F Amp.
(4) RCA-25L6-G..... Power Output
(5) RCA-25Z6-G..... Half-Wave Rectifier

PILOT LAMPS (2) ..... Mazda 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING

(A-C Operation)
Undistorted..... 1.7 watts
Maximum..... 2.7 watts
(D-C Operation)
Undistorted..... 1.4 watts
Maximum..... 2.3 watts

LOUDSPEAKER

Type..... 8-inch Electrodynamic
V.C. Impedance..... 2.2 ohms at 400 cycles

POWER SUPPLY RATINGS

A-C Rating..... 200-250 volts 50/60 cycles, 115 watts
D-C Rating..... 200-250 volts direct current, 105 watts

## Alignment Procedure

**Pre-setting Dial.**—With the gang condenser in full mesh, the dial pointer should be in line with the left-hand end of the dial scales. The pointer is soldered to the drive cable.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

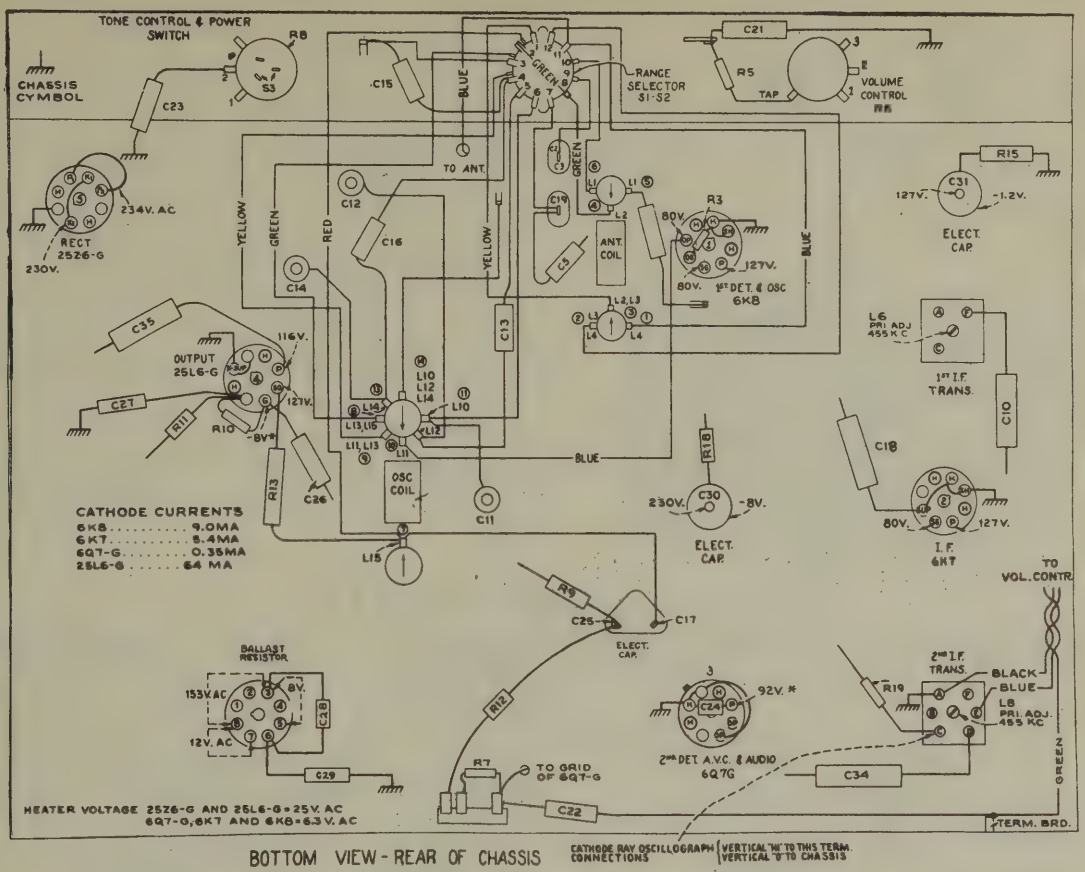
| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L8 and L9 (2nd I-F Trans.) |
| 2 | 6K8 det. grid cap, in series with .01 mfd. | 455 kc | | L6 and L7 (1st I-F Trans.) |
| 3 | Antenna Terminal in series with 300 ohms | 6 mc | 6 mc "B" band | C12 (osc.)* C3 (ant.)† |
| 4 | Antenna Terminal in series with 300 ohms | 20 mc | 20 mc "C" band | C11 (osc.)** (Rock In) |
| 5 | Antenna Terminal in series with 200 mmf. | 600 kc | 600 kc "A" band | L14 (osc.) |
| 6 | Antenna Terminal in series with 200 mmf. | 1,500 kc | 1,500 kc "A" band | C14 (osc.) (Rock In) |
| 7 | Repeat steps 5 and 6. | | | |

* Use **minimum** capacity peak if two peaks can be obtained.

† After adjusting C3, check to determine that C12 has been adjusted to the correct peak by tuning the receiver to approximately 5.09 mc, where a weaker signal should be received.

** Use **maximum** capacity peak if two peaks can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning the receiver to approximately 20.91 mc, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc **above** the signal on **"A"** and **"B"** bands, and 455 kc **below** the signal on **"C"** band.

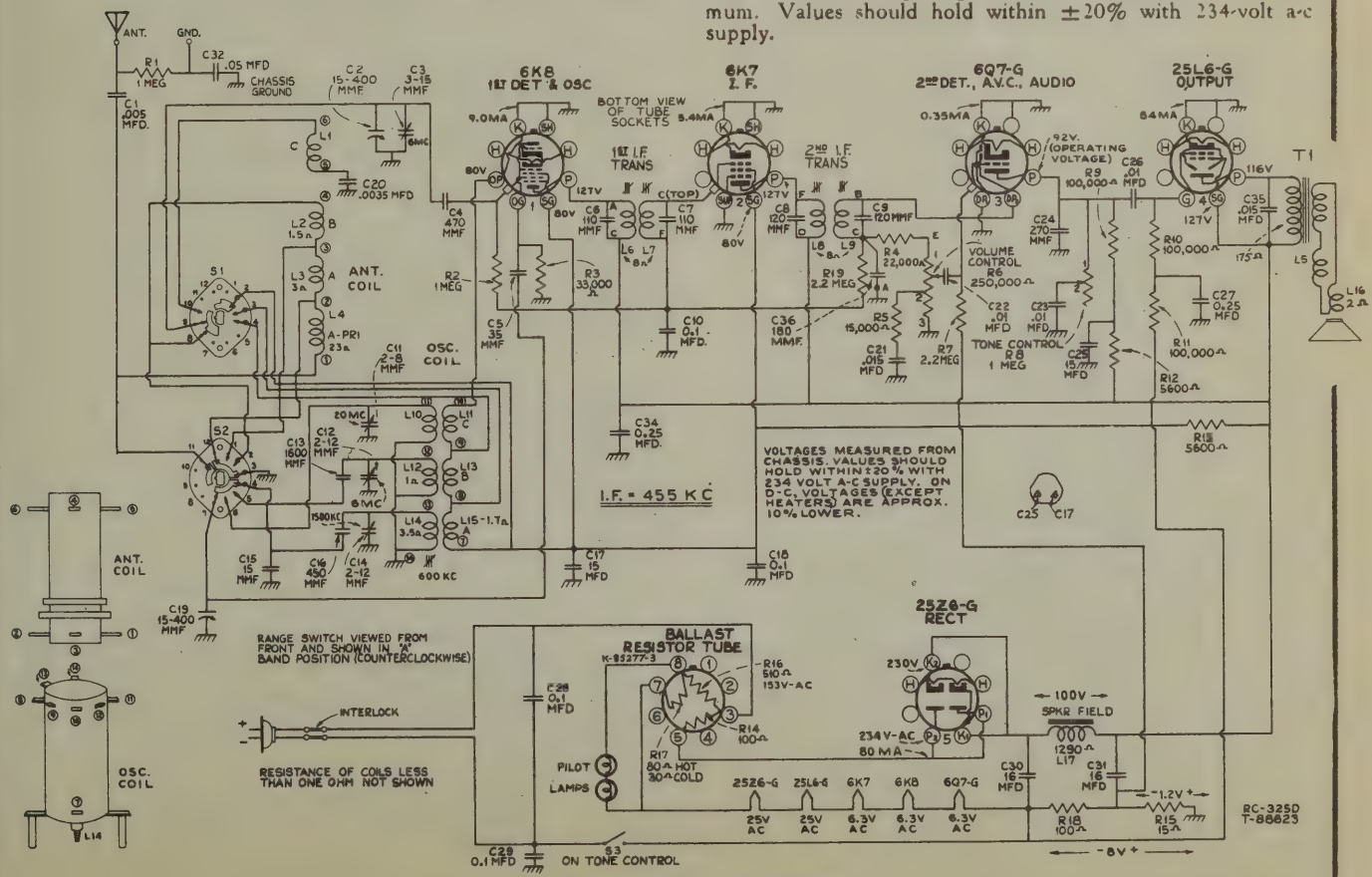



BOTTOM VIEW - REAR OF CHASSIS

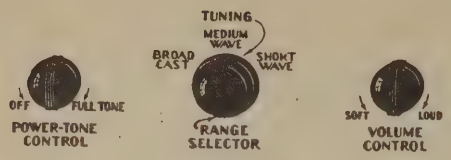
* **NOTE:** values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

*R-F Wiring Diagram and Socket Voltages*

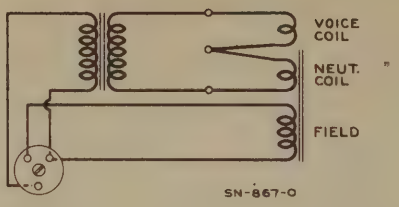
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 234-volt a-c supply.




*Schematic Circuit Diagram*




*Above—Location of Controls*



*At Right—Connections and Colors of Speaker and Cable*

**Precautionary Lead Dress.—**

1. Leads on C20 ("C" band tracking condenser) must be as short as possible.
2. Dress blue lead from oscillator plate away from all parts.
3. Dress speaker cable away from ballast tube.
4. Dress C22 (1st A.F. coupling condenser) against rear apron.

**Power Supply Polarity.—**

For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, a similar reversal of the plug may reduce hum.

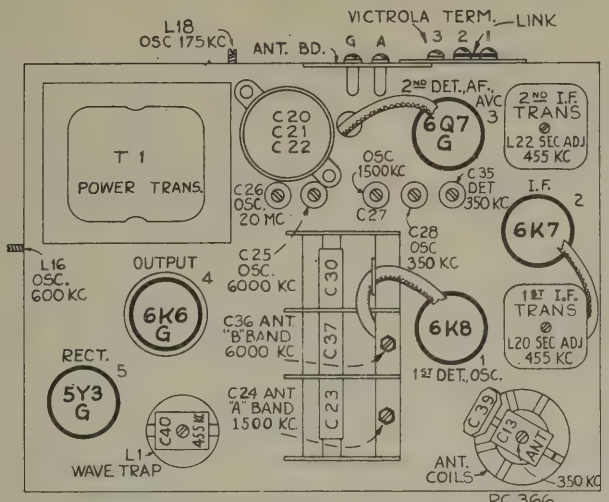
# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

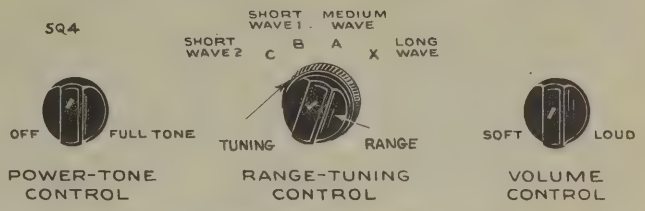
| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **CHASSIS ASSEMBLIES (RC325D)** | | 12695 | Resistor—15,000 ohms, ½ watt (R5) | |
| 14380 | Arm—Hub and arm for operating band indicator shutter—fastens on range switch shaft | | 14284 | Resistor—22,000 ohms, 1/10 watt (R4) | |
| 32247 | Ballast—Ballast tube resistor (R14, R16, R17) | | 12454 | Resistor—33,000 ohms, ½ watt (R3) | |
| 14352 | Belt—Station selector drive belt | | 14560 | Resistor—100,000 ohms, ½ watt (R9, R10, R11) | |
| 13216 | Board—Antenna and ground terminal board | | 2546 | Resistor—1 meg., ½ watt (R1, R2) | |
| 12607 | Cap—Top shield cap for first i-f transformer | | 12679 | Resistor—2.2 meg., ½ watt (R7, R19) | |
| 12581 | Cap—Top shield cap for second i-f transformer | | 14887 | Retainer—Band indicator disc retainer | |
| 30314 | Cap—Grid contact cap | | 14343 | Ring—Retaining ring for range switch shaft | |
| 12807 | Capacitor—Adjustable trimmer (short) (C11) | | 14350 | Screw—No. 8-32 x 3/16-inch square-head set screw for drum, Stock No. 30584; arm, Stock No. 14380, and pulley, Stock No. 30587 | |
| 12714 | Capacitor—Adjustable trimmer (medium) (C12, C14) | | 14340 | Shaft—Drive pulley and knob shaft—fastens on range-switch shaft | |
| 12896 | Capacitor—15 mmfd. (C15) | | 3682 | Shield—Tube shield | |
| 12948 | Capacitor—35 mmfd. (C5) | | 12008 | Shield—I-f transformer shield can | |
| 14262 | Capacitor—110 mmfd. (C6, C7) | | 5119 | Socket—3-contact speaker cable socket | |
| 12404 | Capacitor—120 mmfd. (C8, C9) | | 31251 | Socket—8-contact tube socket | |
| 12488 | Capacitor—270 mmfd. (C24) | | 31365 | Socket—Dial lamp socket | |
| 31954 | Capacitor—450 mmfd. (C16) | | 12007 | Spring—Retaining spring for core, Stock No. 12006 | |
| 30433 | Capacitor—470 mmfd. (C4) | | 30585 | Spring—Tension spring for pointer cord | |
| 30592 | Capacitor—1,600 mmfd. (C13) | | 30588 | Spring—Tension spring for idler pulley | |
| 30303 | Capacitor—.0035 mfd. (C20) | | 30620 | Switch—Range switch (S1, S2) | |
| 4838 | Capacitor—.005 mfd. (C1) | | 30574 | Tone control and power switch (S3, R8) | |
| 14393 | Capacitor—.01 mfd. (C22, C23, C26) | | 14376 | Transformer—First i-f transformer (L6, L7, C6, C7) | |
| 11315 | Capacitor—.015 mfd. (C21, C35) | | 14308 | Transformer—Second i-f transformer (L8, L9, C8, C9, R4, R19) | |
| 4886 | Capacitor—.05 mmfd. (C32) | | 32247 | Tube—Ballast tube (R14, R16, R17) | |
| 4839 | Capacitor—0.1 mfd. (C10, C18, C28, C29) | | 30575 | Volume Controls (R6) | |
| 30965 | Capacitor—0.25 mfd. (C34, C27) | | | **SPEAKER ASSEMBLIES (RL-63F-1)** | |
| 14377 | Capacitor—16 mfd. (C31) | | | | |
| 32222 | Capacitor Pack—Comprising two sections, each 15 mfd. (C17, C25) | | 14356 | Board—3-contact speaker terminal board | |
| 14773 | Capacitor—16 mfd. (covered can) (C30) | | 13866 | Cap—Cone center dust cap | |
| 4358 | Clamp—Mounting clamp for capacitor pack, Stock No. 30577 | | 12012 | Coil—Field coil (L17) | |
| 30621 | Coil—Antenna coil (L1, L2, L3, L4) | | 11469 | Coil—Hum neutralizing coil (L5) | |
| 30579 | Coil—Oscillator coil (L10, L11, L12, L13, L14, L15) | | 31310 | Cone—Speaker cone and dust cap (L16) | |
| 30573 | Condenser—2-gang variable tuning condenser (C2, C3, C19) | | 5118 | Plug—3-contact male plug for speaker | |
| 30586 | Cord—Station selector indicator pointer cord | | 32248 | Speaker—Complete | |
| 12800 | Core—Adjustable core and stud for oscillator coil | | 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke | |
| 12006 | Core—Adjustable core and stud for i-f transformers | | 14628 | Transformer—Output transformer (T1) | |
| 31741 | Dial—Station selector dial scale (glass) | | 14357 | Washer—Spring washer to hold field coil | |
| 30581 | Disc—Band indicator disc with celluloid window | | | **MISCELLANEOUS ASSEMBLIES** | |
| 30572 | Drive—Vernier drive shaft and pinion gear for variable condenser | | | | |
| 30584 | Drum—Station-selector drive-cord drum with set screws | | 11823 | Cord—Power cord complete with male and female plugs | |
| 30583 | Indicator—Station-selector indicator pointer and holder assembly | | 31742 | Escutcheon—Dial escutcheon and crystal | |
| 31480 | Lamp—Dial lamp | | 31803 | Knob—Tone control, volume control or range switch knob | |
| 14028 | Nut—Jamb nut for adjustable capacitor, Stock Nos. 12807 and 12714 | | 31743 | Knob—Station selector knob | |
| 5119 | Plug—3-contact female for speaker cable | | 11979 | Plug—2-contact male for chassis power leads | |
| 30587 | Pulley—Drive-belt pulley for condenser shaft | | 14267 | Screw—Chassis mounting screw and washer assembly | |
| 14638 | Pulley—Drive-belt idler pulley | | 12993 | Screw—No. 8-32 x ¼-inch set screw for knob, Stock No. 31803 | |
| 32247 | Resistor—Ballast tube (R14, R16, R17) | | 11349 | Spring—Retaining spring for knob, Stock No. 13907 | |
| 11565 | Resistor—15 ohms, ½ watt (R15) | | 4982 | Spring—Retaining spring for knob, Stock No. 31743 | |
| 31215 | Resistor—100 ohms, 1 watt (R18) | | | | |
| 11298 | Resistor—5,600 ohms, 1 watt (R13) | | | | |
| 13714 | Resistor—5,600 ohms, ½ watt (R12) | | | | |

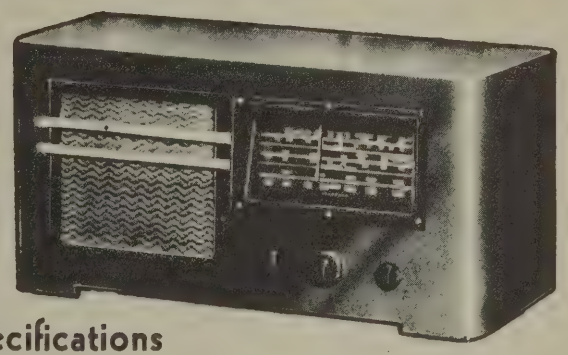
# Five-Tube, Four-Band, A-C, Superheterodyne Receiver MODEL 5Q4

**Chassis No. RC-366**




*Tube and Trimmer Locations*



## Electrical Specifications

FREQUENCY RANGES

Long Wave ("X" Band)..... 150-400 kc (2,000-750 m)
Medium Wave ("A" Band).... 540-1,650 kc (555-181 m)
Short Wave 1 ("B" Band)..... 2.3-7.0 mc (130-42.8 m)
Short Wave 2 ("C" Band).... 7.0-22.0 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6K8..... First Detector—Oscillator
(2) RCA-6K7..... I-F Amplifier
(3) RCA-6Q7-G.. 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-6K6-G..... Power Output
(5) RCA-5Y3-G..... Rectifier

PILOT LAMP (1)..... Mazda 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

Undistorted..... 2.5 watts
Maximum..... 4.5 watts

POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 75 watts
Rating B..... 105-125 volts, 25-60 cycles, 75 watts
Rating C.... 105-125/200-250 volts, 50-60 cycles, 75 watts

LOUDSPEAKER (RL-63H-3)

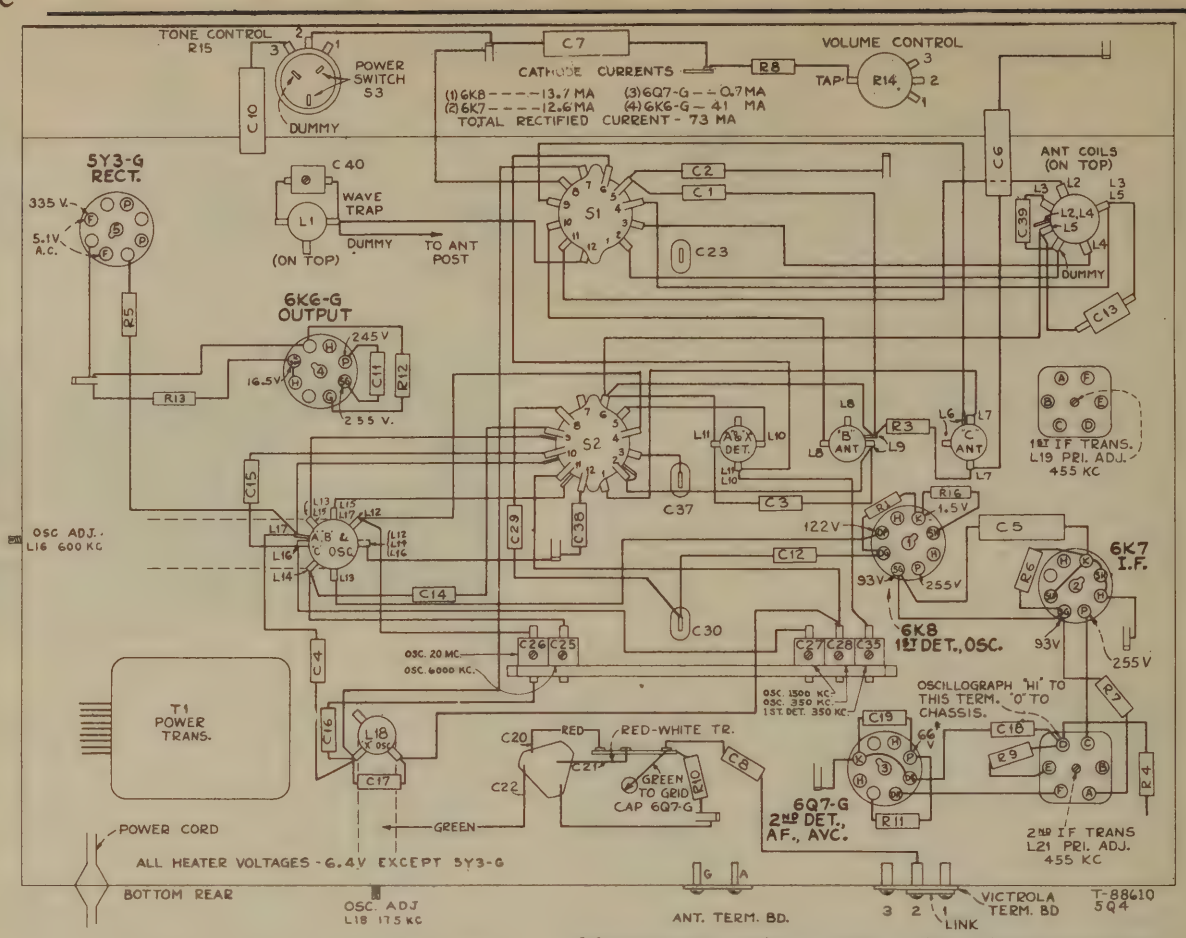
Type..... 8-inch Electrodynamic
V.C. Impedance..... 2.2 ohms at 400 cycles

## Alignment Procedure

**Pre-setting Dial.**—With the gang condenser in full mesh, the dial pointer should be in line with the left end of the dial scales. The pointer is soldered to the drive cable.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following to obtain maximum output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap in series with .01 mfd. | 455 kc | "A" band No Station Point between 550-750 kc | L21 and L22 (2nd I-F transformer) |
| 2 | 6K8 det. grid cap in series with .01 mfd. | 455 kc | | L19 and L20 (1st I-F transformer) |
| 3 | Antenna Terminal in series with 200 mmfd. | 455 kc | | C40 (wave trap) MINIMUM OUTPUT |
| 4 | Antenna Terminal in series with 300 ohms. | 6 mc | 6 mc "B" band | C25 (osc.) use MINIMUM capacity peak<br>C36 (antenna) use MAXIMUM capacity peak* |
| 5 | Antenna Terminal in series with 300 ohms. | 20 mc | 20 mc "C" band | C26 (osc.) use MINIMUM capacity peak* |
| 6 | Antenna Terminal in series with 200 mmfd. | 600 kc | 600 kc "A" band | L16 (osc.) Rock Gang |
| 7 | | 1,500 kc | 1,500 kc "A" band | C27 (oscillator)<br>C24 (antenna) |
| 8 | | 600 kc | 600 kc "A" band | L16 (osc.) Rock Gang |
| 9 | | 175 kc | 175 kc "X" band | L18 (osc.) Rock Gang |
| 10 | | 350 kc | 350 kc "X" band | C28 (oscillator) C35 (1st det.) C13 (antenna) |
| 11 | | 175 kc | 175 kc "X" band | L18 (osc.) Rock Gang |

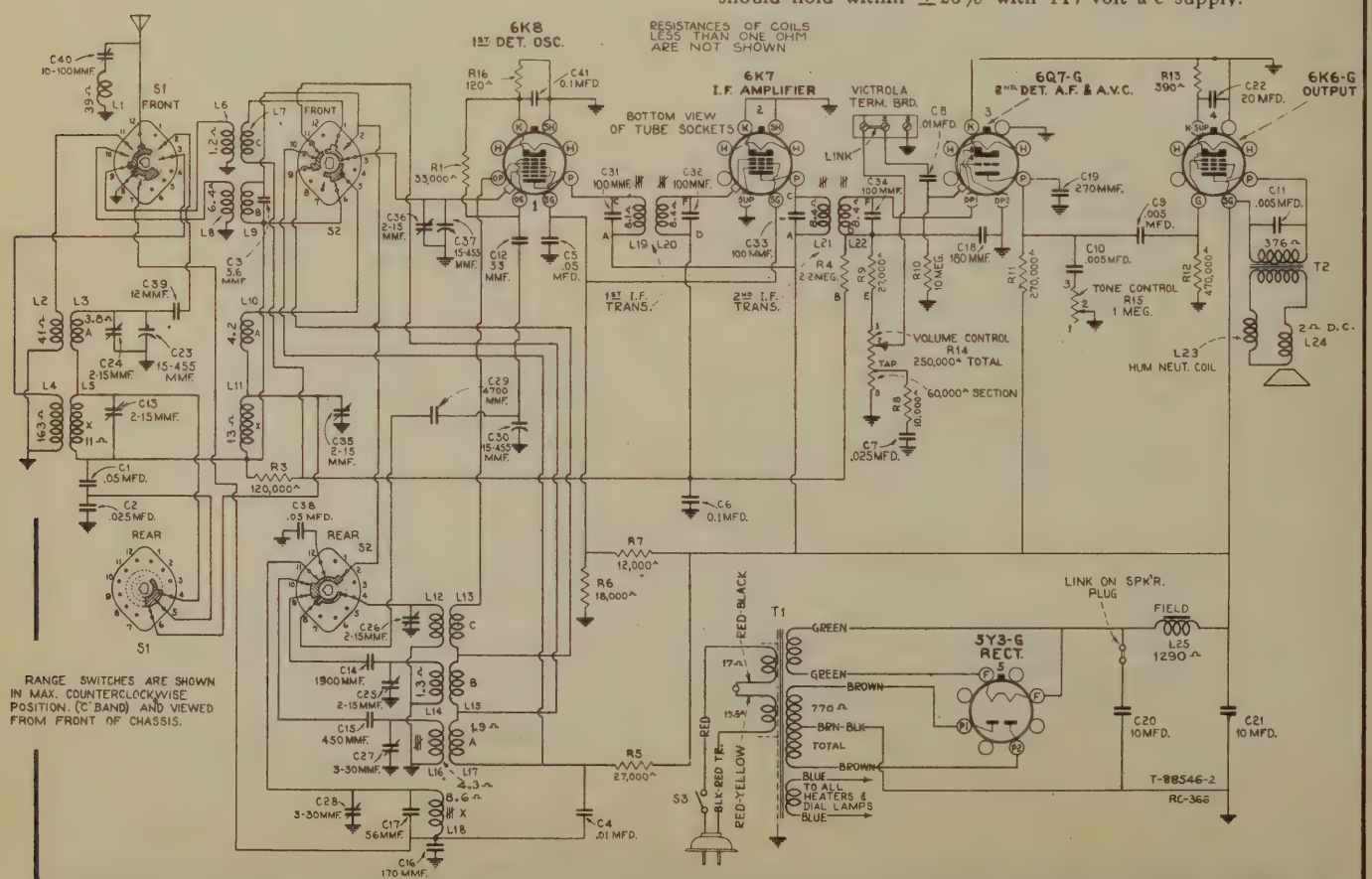
**Note:** Oscillator tracks above the signal on all bands.

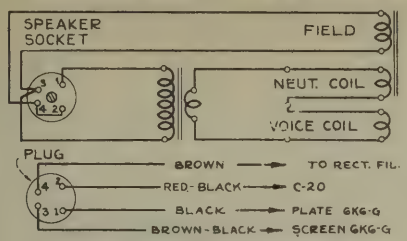



*NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

*R-F Wiring Diagram and Socket Voltages*

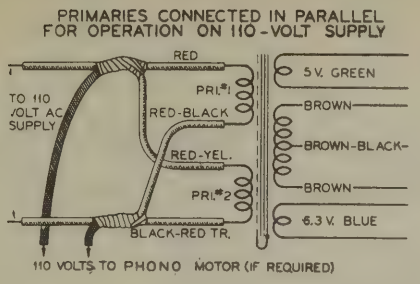
Measurements made to chassis unless otherwise indicated, set tuned to quiet point, volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

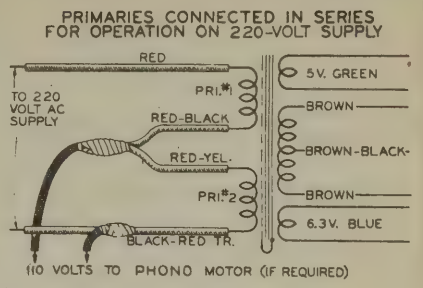





SPEAKER PLUG CONNECTIONS 5Q4

*Connections of Loudspeaker and Cable*



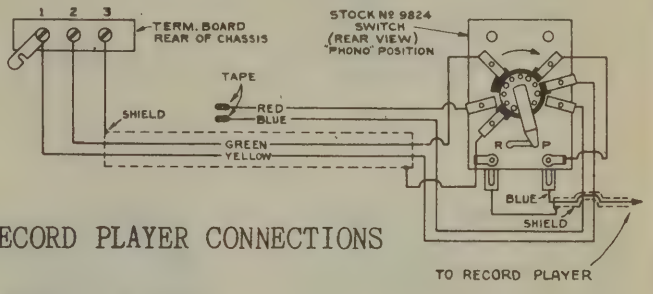

D-C RESISTANCE

| | |
|---|---|
| PRIMARY #1 | 17 Ω |
| PRIMARY #2 | 19.5 Ω |
| H.V. SECONDARY (TOTAL) | 770 Ω |

**Precautionary Lead Dress.—**

1. Dress blue lead from L7 to terminal 1 on range switch S2 clear of coils and other wires.
2. Dress bus from L12 to contact 4 on range switch S2 clear of other wiring.
3. Dress leads on C29 from gang to range switch short and clear of bus wires.
4. Dress leads from X and A band antenna coil close to underside of chassis.
5. Dress all plus B leads to terminal board under electrolytic between the board and the rear apron.
6. Dress blue lead from 6Q7-G plate to terminal 6 on 6K6-G close to chassis and in front of terminal board (under electrolytic).
7. Dress blue lead from antenna terminal close to top of chassis and clear of gang rotor.
8. Twisted leads from volume control must be dressed clear of self-tapping screws in corners of chassis.

*Connections of Universal Power Transformer Primary for 220 and 110 Volts*




RECORD PLAYER CONNECTIONS

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

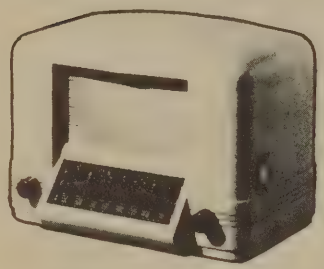
| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES (RC-366)** |
| 14380 | Arm—Hub and arm for range switch shaft—less set screws |
| 14352 | Belt—Variable condenser drive belt |
| 13216 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph input terminal board |
| 31949 | Capacitor—Trimmer capacitor bank comprising three 2-15 mmfd. and two 3-30 mmfd. sections (C13, C25, C26, C27, C28) |
| 12814 | Capacitor—5.6 mmfd. (C3) |
| 13002 | Capacitor—12 mmfd. (C39) |
| 12948 | Capacitor—33 mmfd. (C12) |
| 12723 | Capacitor—56 mmfd. (C17) |
| 31270 | Capacitor—100 mmfd. (C31, C32, C33, C34) |
| 31955 | Capacitor—170 mmfd. (C16) |
| 13003 | Capacitor—180 mmfd. (C18) |
| 12488 | Capacitor—270 mmfd. (C19) |
| 31954 | Capacitor—450 mmfd. (C15) |
| 31953 | Capacitor—1900 mmfd. (C14) |
| 12897 | Capacitor—4700 mfd. (C29) |
| 4838 | Capacitor—.005 mfd. (C9, C10, C11) |
| 14393 | Capacitor—.01 mfd. (C4, C8) |
| 13606 | Capacitor—.025 mfd. (C2) |
| 4870 | Capacitor—.025 mfd. (C7) |
| 13607 | Capacitor—.05 mfd. (C1) |
| 4886 | Capacitor—.05 mfd. (C5) |
| 30882 | Capacitor—.05 mfd. (C38) |
| 4839 | Capacitor—0.1 mfd. (C6) |
| 30899 | Capacitor—0.1 mfd. (C41) |
| 31946 | Capacitor—Comprising two 10 mfd. and one 20 mfd. sections (C20, C21, C22) |
| 31951 | Coil—"A," "B," and "C" bands oscillator coil (L12, L13, L14, L15, L16, L17) |
| 31943 | Coil—"B" band antenna coil (L8, L9) |
| 31944 | Coil—"C" band antenna coil (L6, L7) |
| 31948 | Coil—"X" band oscillator coil (L18) |
| 31947 | Coil—"X" and "A" band antenna coil (L2 L3, L4, L5) |
| 31942 | Coil—"X" and "A" bands r-f coil (L10, L11) |
| 31952 | Coil—Wave trap (L1, C40) |
| 31939 | Condenser—3-gang variable condenser (C23, C24, C30, C36, C37) |
| 30586 | Cord—Indicator drive cord |
| 31950 | Dial—Dial scale |
| 31940 | Drive—Variable condenser pinion gear and shaft |
| 30584 | Drum—Variable condenser drum |
| 30583 | Indicator—Station selector indicator pointer |
| 11891 | Lamp—Dial lamp |
| 5040 | Plug—4-contact female plug for speaker cable. |
| 14636 | Pulley—Drive belt idler pulley |
| 31373 | Pulley—Indicator drive cord pulley |
| 14340 | Pulley—Station selector knob shaft and pulley |
| 30587 | Pulley—Variable condenser drive belt pulley |

| STOCK No. | DESCRIPTION |
|---|---|
| 12071 | Resistor—120 ohms, ½ watt (R16) |
| 31388 | Resistor—390 ohms, 1 watt (R13) |
| 14559 | Resistor—10,000 ohms, ½ watt (R8) |
| 31389 | Resistor—12,000 ohms, 3.5 watts (R7) |
| 30151 | Resistor—18,000 ohms, 1 watt (R6) |
| 12738 | Resistor—27,000 ohms, ½ watt (R9) |
| 13477 | Resistor—27,000 ohms, 1 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 13734 | Resistor—120,000 ohms, ½ watt (R3) |
| 12199 | Resistor—270,000 ohms, ½ watt (R11) |
| 12285 | Resistor—470,000 ohms, ½ watt (R12) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R10) |
| 14887 | Retainer—Indicator drive cord pulley retainer |
| 14343 | Retainer—Retaining ring to hold station selector knob shaft and pulley on range switch shaft |
| 14350 | Screw—No. 8-32 square head set screw for arm Stock No. 14380, pulley Stock No. 30587, and drum Stock No. 30584 |
| 3682 | Shield—Tube shield |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 30588 | Spring—Idler pulley spring |
| 30585 | Spring—Indicator drive cord tension spring |
| 31941 | Switch—Range switch—less coils (S1, S2) |
| 30574 | Tone control and power switch (R15, S3) |
| 31267 | Transformer—First i-f transformer (L19, L20, C31, C32) |
| 31268 | Transformer—Second i-f transformer (L21, L22, C33, C34) |
| 31945 | Transformer—Power transformer 105-120 and 210-240 volts, 50-60 cycles (T1) |
| 30575 | Volume Control (R14) |
| | **SPEAKER ASSEMBLIES (RL63H-3)** |
| 31825 | Cap—Speaker cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L23) |
| 12012 | Coil—Speaker field coil (L25) |
| 31310 | Cone—Speaker cone and voice coil (L24) |
| 31302 | Plug—4-contact male plug for speaker |
| 31824 | Speaker complete |
| 14355 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31742 | Escutcheon—Dial escutcheon |
| 13907 | Knob—Volume control, tone control, or range switch knob |
| 31743 | Knob—Station selector knob |
| 4982 | Spring—Retaining spring for knob Stock No. 31743 |
| 11349 | Spring—Retaining spring for knob Stock No. 31907 |

# MODELS 5Q5, 5Q55, 5Q56, 6Q7, 6QU, Q18, U-50

Chassis No. RC-396, RC-396, RC-396, RC-414A RC-414 RC-477 RC-414C
(2nd Prod.) RC-477

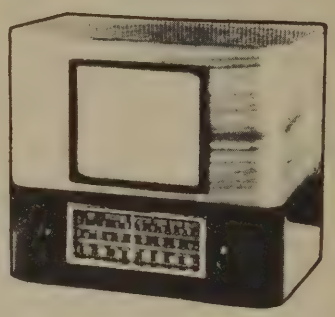
## Five- and Six-Tube, Three-Band, A-C, Superheterodyne Receivers and Radio-Phonograph Combinations



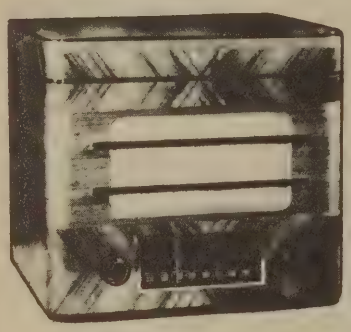
| Models | Description |
|---|---|
| *5Q5A* | *Brown Plastic Cabinet* |
| *5Q5B* | *Black Plastic Cabinet* |
| *5Q5C* | *Ivory Plastic Cabinet* |
| *5Q5D* | *Maroon Plastic Cabinet* |
| *5Q5E* | *Black Plastic Cabinet with Metal Grille* |
| *5Q55* | *Mottled Brown Plastic Cabinet* |
| *5Q56* | *Ivory Finish Plastic Cabinet* |

←

| Cabinet Dimensions | Models 5Q5, 5Q55 5Q56 | Model 6Q7 |
|---|---|---|
| Height | 9¾ inches | 12-5/16 inches |
| Width | 13½ inches | 14⅛ inches |
| Depth | 8⅞ inches | 8⅛ inches |
| Tuning Drive Ratio | 18 to 1 | |



*Model 6Q7*
*Striped Walnut Wood Cabinet*

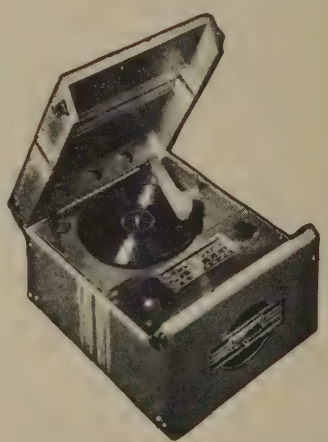


MODEL 6QU

MODEL Q 18

| Cabinet Dimensions | Height | Width | Depth |
|---|---|---|---|
| | (inches). 14¾ | 16 3/16 | 13 5/16 |
| Tuning Drive Ratio | 11 to 1 | | |

Victrolas having "C5" or "C6" power rating may be made to operate on either 110 or 220 volts, conversion from one voltage to the other being made by means of a switch at the back of the chassis.



**Victrola U-50.**

| Cabinet Dimensions | Height | Width | Depth |
|---|---|---|---|
| | 9¾ in... | 18-15/16 in... | 14½ in. |
| Tuning Drive Ratio | 11 to 1 | | |

## Electrical and Mechanical Specifications

**Frequency Ranges**

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc (555-174 m) |
| "Medium Wave" (B) | 2.3-7.0 mc (130-42.8 m) |
| "Short Wave" (C) | 7.0-22.0 mc (42.8-13.6 m) |
| Intermediate Frequency | 455 kc |

**RCA Tube Complement**

| | |
|---|---|
| (1) RCA-6SA7 | First Detector—Oscillator |
| (2) RCA-6K7 | Intermediate Amplifier |
| (3) RCA-6SQ7 | Second-Detector, A.V.C., and A-F Amplifier |
| (4) RCA-6F6-G | Power Output |
| (5) RCA-5Y3-G | Full-Wave Rectifier |
| (6) RCA-6U5 (Model 6Q7) | "Magic Eye" |
| Pilot Lamp (1) | Mazda 44, 6.3 volts, 0.25 amp. |

**Power Output Rating**

| | U 50 ONLY | |
|---|---|---|
| Undistorted | 2.0 watts | 1.5 watts |
| Maximum | 3.6 watts | 3.3 watts |

**Phonograph Mechanism 6QU & U50**

Type..... Manual; 10-inch or 12-inch records
Motor... Self-starting, constant speed induction

**Crystal Pickup 6QU & U50**

Impedance..... 100,000 ohms at 1,000 cycles
Average Output.. 1½ volts at 1,000 cycles with 250,000 ohms load

**Loudspeaker 5Q5, 5Q55, 5Q56, 6Q7 & Q18**

| | |
|---|---|
| Type (5Q5, 5Q55, 5Q56) | RL-78-2. 5-inch Electrodynamic |
| (6Q7) | RL-79-2. 6-inch Electrodynamic |
| Voice-Coil Impedance | 3.4 ohms at 400 cycles |

**Power Supply Ratings**

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 70 watts |
| Rating B | 105-125 volts, 25-60 cycles, 70 watts |
| Rating C | 105-125/200-250 volts, 50-60 cycles, 70 watts |

**Loudspeaker (RL-79-2) 6QU**

Type..... 6-inch electrodynamic
V.C. Impedance..... 3.4 ohms at 400 cycles

**Power Supply Ratings**

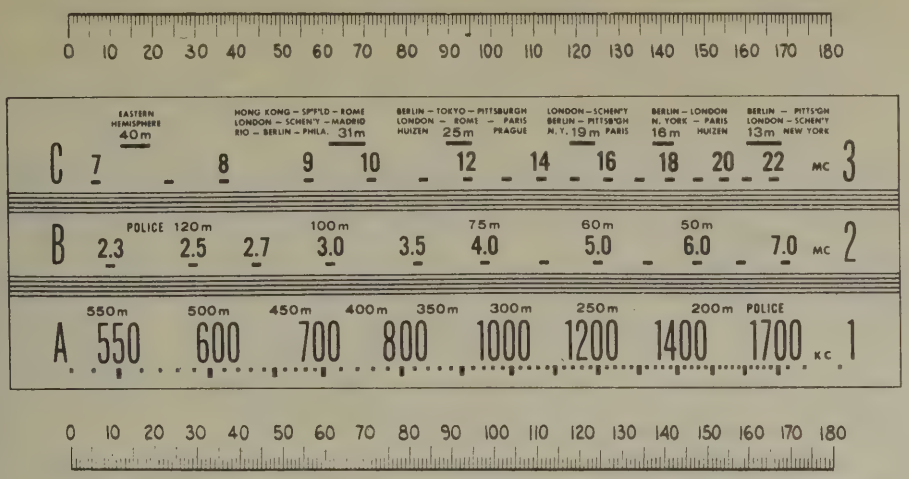
| | |
|---|---|
| Rating A5 | 105-125 volts, 60 cycles, 100 watts |
| Rating A6 | 105-125 volts, 50 cycles, 100 watts |
| Rating C6 | 105-125; 200-250 volts, 60 cycles, 100 watts |
| Rating C5 | 105-125; 200-250 volts, 50 cycles, 100 watts |

**Power Supply Ratings U50**

Rating A.. 105-125 volts, 50-60 cycles, 105 watts

**Loudspeaker (84604-1)**

Type..... 8-inch electrodynamic
Voice Coil Impedance.. 3.3 ohms at 400 cycles


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
EASTERN HEMISPHERE 40m
HONG KONG – SPT'LD – ROME LONDON – SCHEN'Y – MADRID RIO – BERLIN – PHILA. 31m
BERLIN – TOKYO – PITTSBURGH LONDON – ROME – PARIS HUIZEN 25m PRAGUE
LONDON – SCHEN'Y BERLIN – PITTSB'GH N.Y. 19m PARIS
BERLIN – LONDON N. YORK – PARIS 16m HUIZEN
BERLIN – PITTS'GH LONDON – SCHEN'Y 13m NEW YORK
C 7 8 9 10 12 14 16 18 20 22 MC 3
POLICE 120m 100m 75m 60m 50m
B 2.3 2.5 2.7 3.0 3.5 4.0 5.0 6.0 7.0 MC 2
550m 500m 450m 400m 350m 300m 250m 200m POLICE
A 550 600 700 800 1000 1200 1400 1700 KC 1
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

## Calibration Scale

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.** — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 45 degree mark on the drum scale (see "Drum Drive and Indicator Cord Assembly" drawings) must be in a horizontal position when the plates are fully meshed. The distance from the edge of the chassis to the drum must not exceed ⅜-inch. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

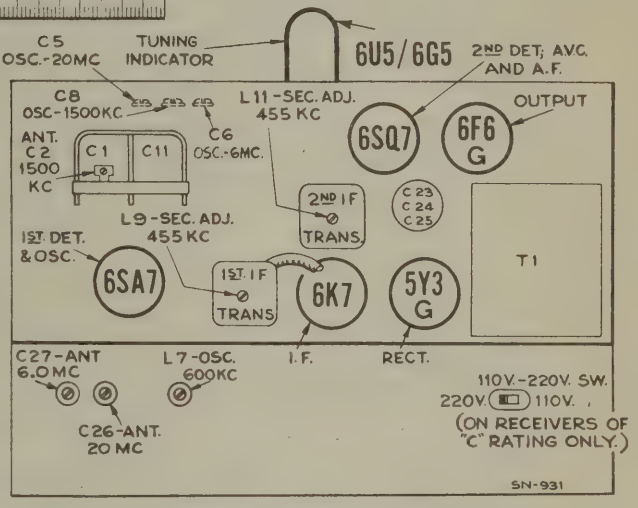
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

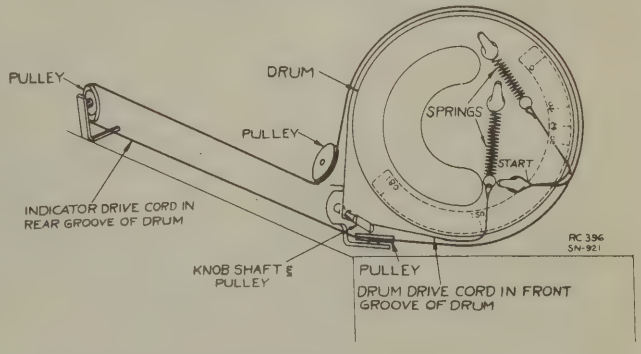
For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" Band quiet point between 550-750 kc | L10 and L11 (2nd I.F. trans.) |
| 2 | Tuning condenser stator (osc.) in series with .01 mfd. ** | 455 kc | | L8 and L9 (1st I.F. trans.) |
| 3 | Antenna lead (blue) in series with 200 mmfd. | 600 kc | 600 kc (33°) "A" Band | L7† |
| 4 | | 1,500 kc | 1,500 kc (152.4°) "A" Band | C2 (ant.) C8 (osc.) |
| 5 | Repeat steps 3 and 4 | | | |
| 6 | Antenna lead (blue) in series with 400 ohms | 20 mc | 20 mc (155.4°) "C" Band | C5 (osc.) * C26 (ant.) |
| 7 | | 6 mc | 6 mc (149°) "B" Band | C6 (osc.) * C27 (ant.) |
| 8 | Antenna lead (blue) in series with 200 mmf. | 1,500 kc | 1,500 kc (152.4°) "A" Band | C8 (osc.) |

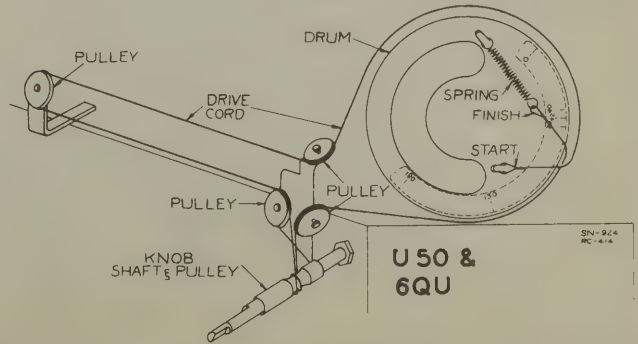
* Use minimum capacity peak if two peaks can be obtained.
† Rock gang condenser slightly while adjusting L7.
** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.
Note.—Oscillator tracks 455 kc above signal on all bands.




*Tube and Trimmer Locations*

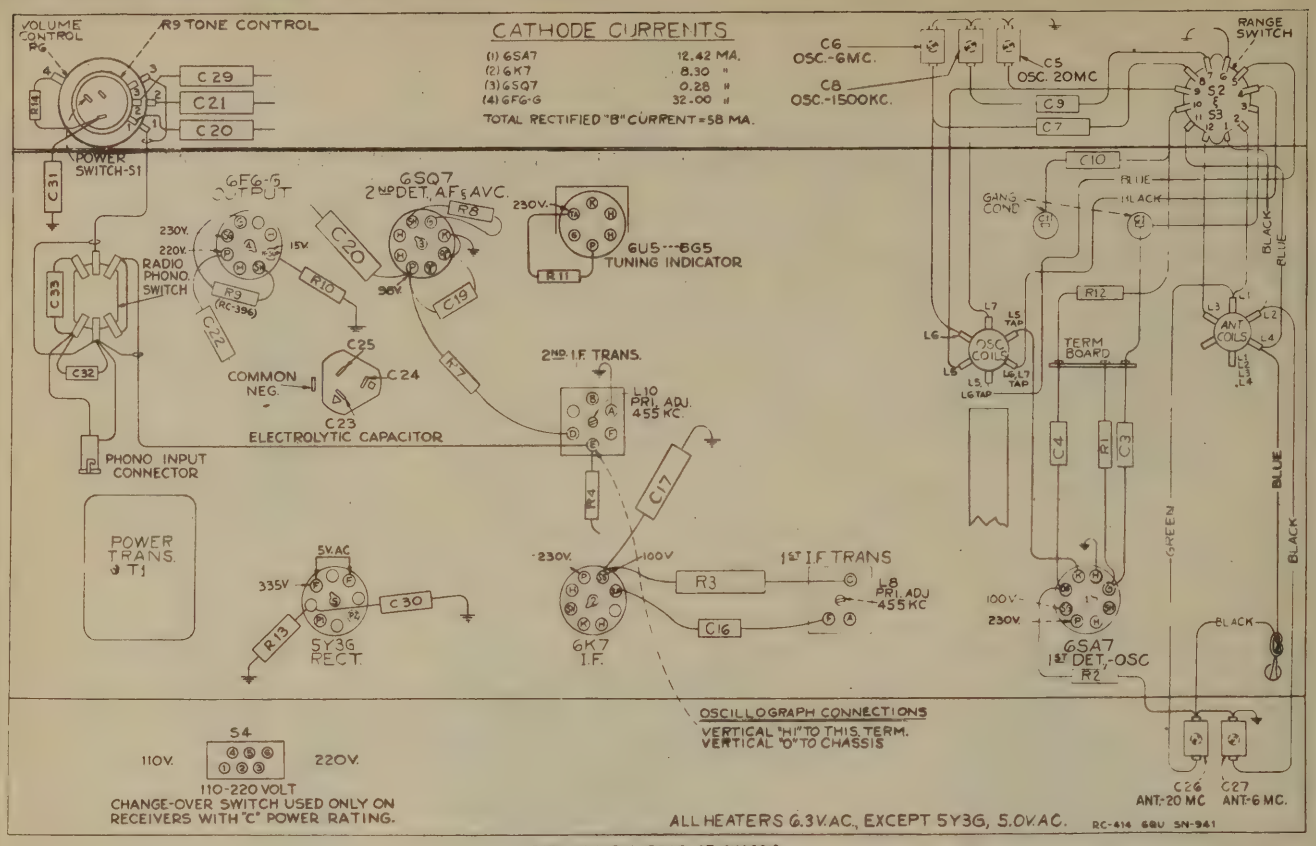



*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator (Models 5Q5, 5Q55 and 5Q56 &Q18) Drum Shown with Gang at Maximum Capacity*




*Arrangement of Drive Cord for Tuning Condenser and Dial Indicator (Model 6Q7) Drum Shown with Gang at Maximum Capacity*

# 5Q5, 5Q55, 5Q56, 6QU, 6Q7, Q-18, U-50



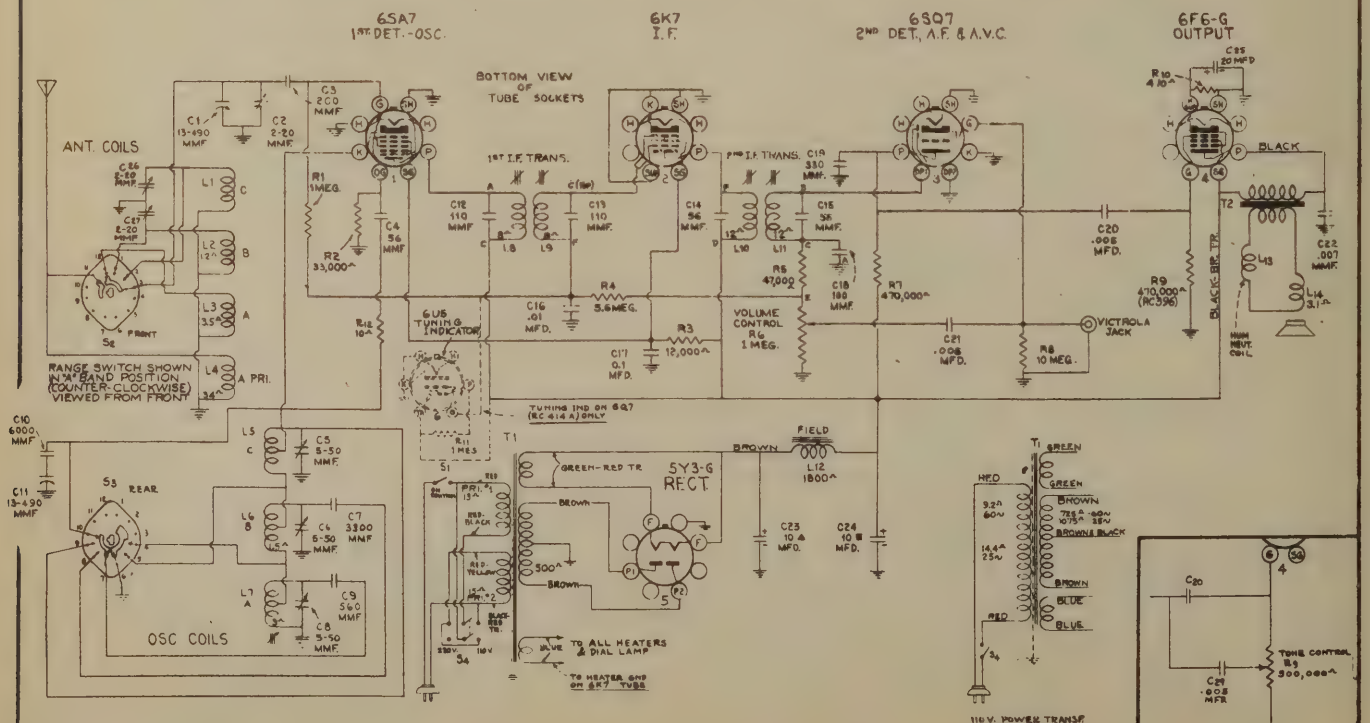

BOTTOM VIEW - REAR OF CHASSIS

## *R-F Wiring Diagram and Socket Voltages*

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ± 20% with 117-volt a-c supply.

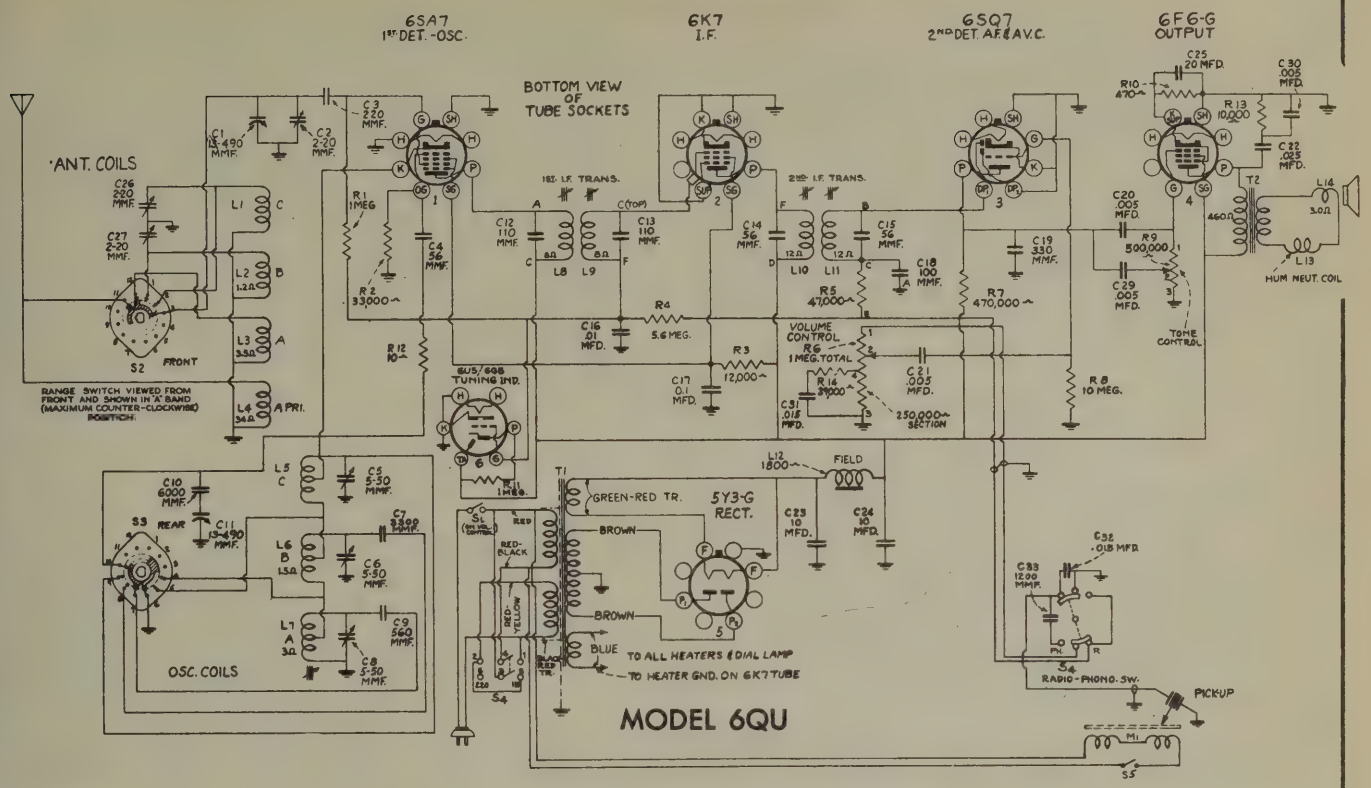
***NOTE**: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Plate voltages and currents of U-50 are 5% higher.


6SA7 1ST DET.-OSC.
6K7 I.F.
6SQ7 2ND DET., A.F. & A.V.C.
6F6-G OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
ANT. COILS
1ST I.F. TRANS.
2ND I.F. TRANS.
6U5 TUNING INDICATOR
VOLUME CONTROL R6 1 MEG.
VICTROLA JACK
RANGE SWITCH SHOWN IN "A" BAND POSITION (COUNTER-CLOCKWISE) VIEWED FROM FRONT
OSC COILS
5Y3-G RECT.
TUNING IND ON 6Q7 (RC 414 A) ONLY
TO ALL HEATERS & DIAL LAMP
TO HEATER END OF 6K7 TUBE
110 V. POWER TRANSF. CONNECTIONS
FOR 6Q7 (RC 414 A) ONLY
Q18 RC 477
& 5Q5 RC 477
2ND PROD.

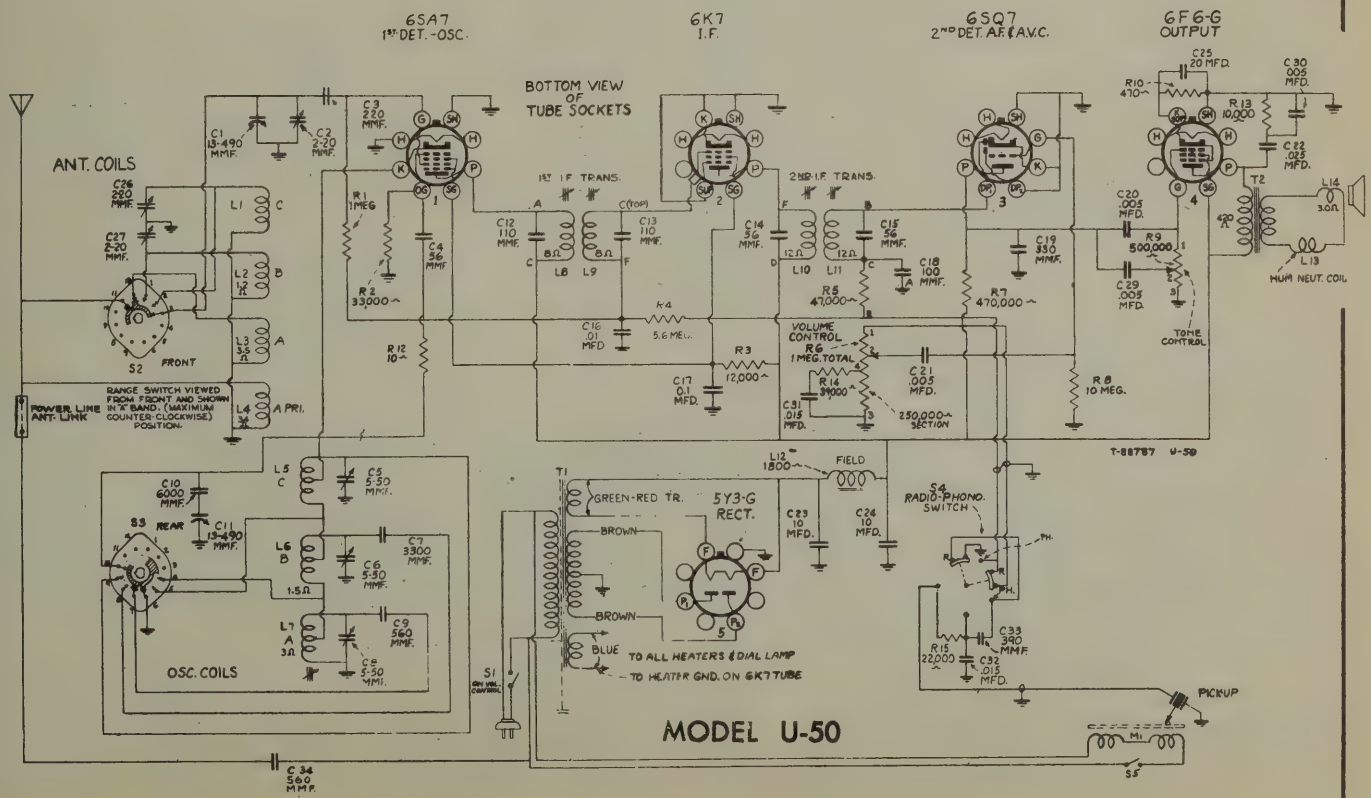
**MODELS 5Q5 5Q55 5Q56 6Q7 & Q18**

*Schematic Circuit Diagram*




*Schematic Circuit Diagram*

Radio-phono. switch changed in 2nd Prod. - see following page.




*Schematic Circuit Diagram*

# Miscellaneous Service Data

**Phonograph Mechanism:**

The phonograph motor is a self-starting, constant-speed induction type. It should be lubricated every six months by applying a few drops of light machine oil to the spindle bearing and oil hole.

The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1⅞ inches from the center line of the spindle shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.

**Power-Line Antenna:**

At the back of the motorboard is a terminal board for antenna and ground connections. When it is desired to use the power line antenna, a jumper should be placed across the two outside binding-posts, thus connecting the antenna input of the receiver through a capacitor to the power line. The center binding-post is for the ground connection. When an external antenna is used, it should be connected to the post marked "ANT".

### Precautionary Lead Dress

1. Lead from 2nd I.F. (E) to volume control should be kept close to chassis.
2. R.F. coil leads should be kept short and away from coil.
3. Leads to 6,000 mmf. (C10) should be as short as possible and condenser dressed away from chassis, bearing against 10 ohm (R12) resistor.

## MODEL 5Q5

**With Tone Control:**

The 2nd production of Model 5Q5 uses chassis No. RC-477 and has a .5 meg. tone control.

The tone control is connected in place of the output-tube grid resistor (R9), with a .005 mfd. capacitor connected from the arm of the tone control to the 1st-audio plate.

For service data and replacement parts on RC-477, refer to the Service Data for the 1st-production Model 5Q5 (RC-396), and the following parts:

| Stock No. | |
|---|---|
| 34146 | Control—Tone control, .5 meg..... |
| 4838 | Capacitor—.005 mfd..... |

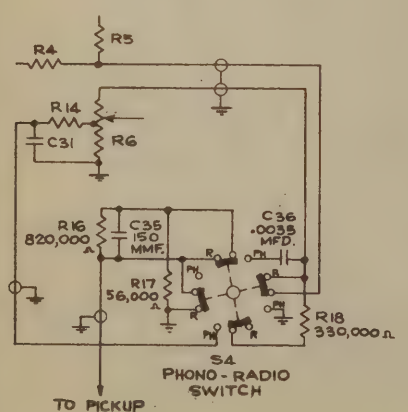
## MODEL 6QU

**2nd Production:**

The radio-phono switching circuit is changed as shown in the accompanying diagram. Also, R13 and C22 are removed from the output plate circuit, and C30 (.005 mfd.) is connected from plate to cathode on the output tube.

The following parts are used in the revised circuit:

| Stock No. | |
|---|---|
| 12725 | Capacitor—150 mmfd. (C35)..... |
| 30303 | Capacitor—.0035 mfd. (C36)..... |
| 30963 | Resistor—820,000 ohms, ½-watt (R16) |
| 12286 | Resistor—56,000 ohms, ½-watt (R17) |
| 14983 | Resistor—330,000 ohms, ½-watt (R18) |
| 32743 | Switch—Radio-phono switch..... |




*Radio-Phono Switching Circuit Used in 2nd-Production of Model 6QU.*

## MODEL Q18

This model uses Chassis No. RC-477, which is identical to the chassis used on 2nd Production Model 5Q5 except for the following parts:

| Stock No. | Description |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-477)** |
| 32068 | Transformer — First I.F. transformer ..... |
| 32825 | Transformer — Second I.F. transformer ..... |
| | **SPEAKER ASSEMBLIES (RL-78-2)** |
| 35440 | Cone—Speaker cone, voice coil, center suspension, and dust cap..... |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35387 | Decalcomania—Power switch decal ..... |
| 37616 | Decalcomania—Range switch decal ..... |
| 35392 | Decalcomania—Trade mark decal ..... |
| 32837 | Dial—Glass dial scale..... |
| 34221 | Frame—Dial frame complete —less dial, indicator, and indicator guide shafts |
| 32847 | Indicator—Station selector indicator and carriage..... |
| 37614 | Knob—Range switch knob.. |
| 37613 | Knob—Tone control or tuning knob..... |
| 37615 | Knob—Volume control knob |
| 34491 | Shaft—Indicator carriage guide shaft..... |

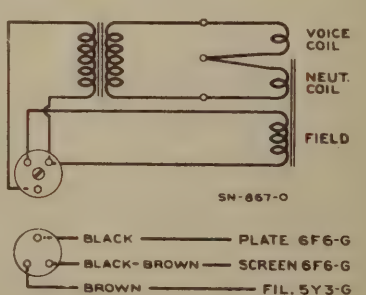
## MODEL U-50

**Increasing Victrola Gain:**

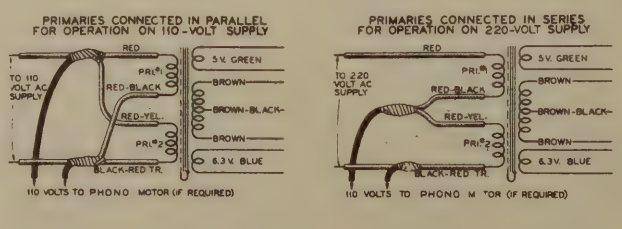
The over-all amplification of these models, when used as Victrolas, is limited by the voltage divider circuit comprised of a resistor in series with, and a capacitor across the pickup circuit. Values of these components are established on the basis of:

(a) Average available voltage output from pickup under average climatic conditions.
(b) Degree of "rumble" likely with given amplification.
(c) Danger of "microphonic howl" with high amplification.
(d) Possible consumer reaction to overload occurring at a low volume control setting with heavily cut records.

If these points are kept in mind, additional gain may be obtained, wherever desired, by decreasing the value of the pickup shunt-capacitor; C-1 in Model O-50 and C-32 in Model U-50. The substitute capacitor should be approximately ½ to ⅓ the value of the original.

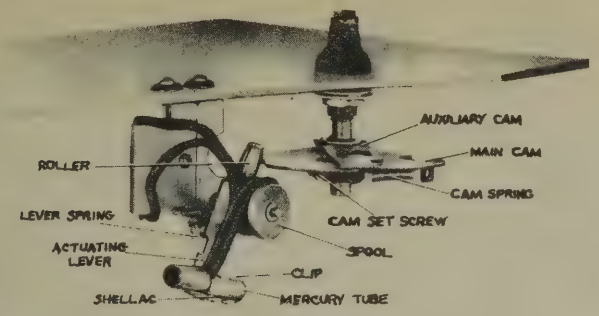



*Connections and Colors of Speaker and Cable*

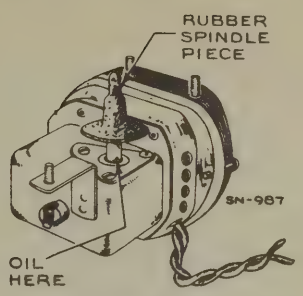



| D-C Resistance | | |
|---|---|---|
| | Primary No. 1..... | 13 ohms |
| | Primary No. 2..... | 15 ohms |
| | H. V. Secondary (Total)..... | 500 ohms |

*Connections of Universal Power Transformer Primary for 220 and 110 Volts*




*Switch Mechanism*
(Shown with pickup in rest position)




*Phonograph Motor*

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 32832 | Bracket—Drive bracket, pulleys, and tuning knob shaft complete (Models 5Q5, 5Q55 and 5Q56) |
| 32635 | Cable—Pointer drive cable (Models 5Q5, 5Q55 and 5Q56) |
| 12581 | Cap—First I.F. transformer shield cap |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30949 | Capacitor—56 mmfd. (C14, C15) |
| 14262 | Capacitor—109 mmfd. (C12, C13) |
| 32238 | Capacitor—110 mmfd. (C18) |
| 12694 | Capacitor—220 mmfd. (C3) |
| 12952 | Capacitor—330 mmfd. (C19) |
| 12537 | Capacitor—560 mmfd. (C9) |
| 31403 | Capacitor—3,300 mmfd. (C7) |
| 31405 | Capacitor—6,000 mmfd. (C10) |
| 32830 | Capacitor—Trimmer capacitor bank, 2 sections 2-20 mmfd. (C26, C27) |
| 32829 | Capacitor—Trimmer capacitor bank, 3 sections 5-50 mmfd. (C5, C6, C8) |
| 4838 | Capacitor—.005 mfd. (C20, C21, C29) |
| 5148 | Capacitor—.007 mfd. (C22) |
| 14393 | Capacitor—.01 mfd. (C16) |
| 4839 | Capacitor—0.1 mfd. (C17) |
| 32240 | Capacitor—Electrolytic, 2 sections 10 mfd., 1 section 20 mfd. (C23, C24, C25) |
| 32821 | Coil—Antenna coil A, B, C, bands (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil—A, B, C bands (L5, L6, L7) |
| 32817 | Condenser—2-gang variable condenser (C1, C2, C11) |
| 32634 | Cord—Drive cord |
| 32713 | Core—Core and stud for oscillator coil adjustment |
| 32835 | Drum—Drive cord drum |
| 11891 | Lamp—Dial lamp |
| 32953 | Plate—Dial back plate and pointer—less dial scale (Model 6Q7) |
| 5119 | Plug—3-contact female for speaker cable |
| 32834 | Pulley—Drive cord pulley and mounting bracket (1 pulley) |
| 32951 | Pulley—Drive cord pulleys and mounting bracket (3 pulleys) (Model 6Q7) |
| 13988 | Resistor—10 ohms, ½ watt (R12) |
| 30681 | Resistor—470 ohms, 1 watt (R10) |
| 12013 | Resistor—1 meg., 1/10 watt (R11) (Model 6Q7) |
| 31389 | Resistor—12,000 ohms, 3½ watt (R3) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R5) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7, R9) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 11668 | Resistor—5.6 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R8) |
| 14343 | Retainer—Retaining ring for holding tuning knob shaft (Model 6Q7) |
| 14887 | Retainer—Tuning knob shaft retainer (Models 5Q5, 5Q55 and 5Q56) |
| 32845 | Screw—No. 8-32 square head set screw for drum |
| 32833 | Shaft—Tuning knob shaft, eyelet and retainer (Models 5Q5, 5Q55 and 5Q56) |
| 32932 | Shaft—Tuning knob shaft (Model 6Q7) |
| 31365 | Socket—Dial lamp insulated socket |
| 31251 | Socket—Octal base tube socket |
| 32950 | Socket—Magic Eye socket and bracket (Model 6Q7) |
| 14278 | Socket—Phonograph socket |
| 31418 | Spring—Drive cord or pointer cable tension spring |
| 32819 | Switch—Range switch (Models 5Q5, 5Q55 and 5Q56) (S2, S3) |
| 32929 | Switch—Range switch (Model 6Q7) (S2, S3) |
| 32827 | Switch—Voltage change switch—110-220 volts (S4) |
| 14376 | Transformer—First i.f. transformer (L8, L9, C12, C13) |
| 32825 | Transformer—Second i.f. transformer (L10, L11, C14, C15, C18, R5) |
| 32910 | Transformer—Power transformer—105-120 volts, 25-60 cycles (T1) |
| 32911 | Transformer—Power transformer—105-120 volts, 50-60 cycles (T1) |
| 32852 | Transformer—Power transformer—105-120 and 200-240 volts, 50-60 cycles (T1) |
| 32818 | Volume control and switch (R6, S1) (Models 5Q5 and 5Q55) |
| 32928 | Volume control, tone control and power switch (R6, R9, S1) (Model 6Q7) |
| | **SPEAKER ASSEMBLIES** Models 5Q5, 5Q55 and 5Q56 (RL-78-2) |
| 32907 | Cap—Cone center dust cap |
| 32903 | Coil—Speaker field coil (L12) |
| 32906 | Coil—Speaker hum neutralizing coil (L13) |
| 32904 | Cone—Speaker cone, voice coil, center suspension, and dust cap (L14) |
| 5118 | Plug—3-contact male for speaker |
| 32902 | Speaker—Complete |
| 32905 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES** Model 6Q7 (RL-79-2) |
| 32907 | Cap—Speaker cone center dust cap |
| 32903 | Coil—Speaker field coil (L12) |
| 32906 | Coil—Speaker hum neutralizing coil (L13) |
| 35441 | Cone—Speaker cone and voice coil |
| 5118 | Plug—3-prong male for speaker |
| 32933 | Speaker—Complete |
| 32905 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32845 | Bracket—Dial mounting bracket and lamp bracket assembly—less pointer and pointer slide rods (Models 5Q5, 5Q55 and 5Q56) |
| 32837 | Dial—Dial scale |
| 32843 | Knob—Black range switch knob (Models 5Q5 and 5Q55) |
| 33085 | Knob—Black tuning knob (Models 5Q5 and 5Q55) |
| 32841 | Knob—Black volume control knob (Models 5Q5 and 5Q55) |
| 32839 | Knob—Brown tuning knob (Models 5Q5 and 5Q55) |
| 33087 | Knob—Ivory range switch knob (Models 5Q5 and 5Q55) |
| 33091 | Knob—Ivory tuning knob (Models 5Q5 and 5Q55) |
| 33086 | Knob—Ivory volume control knob (Models 5Q5 and 5Q55) |
| 33563 | Knob—Maroon range switch knob (Models 5Q5 and 5Q55) |
| 33093 | Knob—Maroon tuning knob (Models 5Q5 and 5Q55) |
| 33562 | Knob—Maroon volume control (Models 5Q5 and 5Q55 |
| 32847 | Pointer—Dial pointer, carriage and clip |
| 32846 | Rod—Pointer slide rod |
| 4393 | Screw—No. 8-32 x 5/16 headless set screw for knob, Stock Nos. 32840, 32842, 32844, 33088, 33089, 33090, 33092 and 33094 |
| 32937 | Knob—Range switch knob (small) (Model 6Q7) |
| 33029 | Knob—Tone control and switch knob (small) (Model 6Q7) |
| 32935 | Knob—Tuning knob (large) (Model 6Q7) |
| 32936 | Knob—Volume control knob (large) (Model 6Q7) |
| 4982 | Spring—Retaining spring for knob, Stock No. 32935 (Model 6Q7) |
| 80330 | Spring—Retaining spring for knob, Stock No. 33029 (Model 6Q7) |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 32839, 32841, 32843, 33085, 33086, 33087, 33091 and 33093 |

# MODEL 6QU

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-414)** |
| 33528 | Bracket—Drive bracket and 1 pulley assembled |
| 32951 | Bracket—Drive bracket and 3 pulleys assembled |
| 32136 | Cable—Phono. input shielded lead and socket |
| 12581 | Cap—Top shield cap for i-f transformer |
| 32830 | Capacitor—2-gang trimmer, 2-20 mmfd. each section (C26, C27) |
| 32829 | Capacitor—3-gang trimmer, 5-60 mmfd. each section (C5, C6, C8) |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30949 | Capacitor—56 mmfd. (C14, C15) |
| 14262 | Capacitor—109 mmfd. (C12, C13) |
| 32238 | Capacitor—110 mmfd. (C18) |
| 30232 | Capacitor—220 mmfd. (C3) |
| 12952 | Capacitor—330 mmfd. (C19) |
| 13894 | Capacitor—390 mmfd. (C33) |
| 12537 | Capacitor—560 mmfd. (C9) |
| 13054 | Capacitor—1,200 mmfd. (C33) |
| 31403 | Capacitor—3,300 mmfd. (C7) |
| 31405 | Capacitor—6,000 mmfd. (C10) |
| 33584 | Capacitor—.005 mfd. (C30) |
| 4838 | Capacitor—.005 mfd. (C20, C21, C29) |
| 14393 | Capacitor—.01 mfd. (C16) |
| 11315 | Capacitor—.015 mfd. (C31, C32) |
| 4870 | Capacitor—.025 mfd. (C22) |
| 4839 | Capacitor—0.1 mfd. (C17) |
| 32240 | Capacitor—Electrolytic, 2 sections 10 mfd., 400 V., and one section 20 mfd., 25 V. (C23, C24, C25) |
| 32821 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil (L5, L6, L7) |
| 32817 | Condenser—2-gang variable tuning (C1, C2, C11) |
| 33533 | Control—Volume control, tone control, and power switch |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 32835 | Drum—Drive cord drum with set screw |
| 11891 | Lamp—Dial lamp—Mazda No. 44 |
| 30868 | Plug—2-contact female motor cable plug |
| 5040 | Plug—Female plug for speaker cable |
| 13988 | Resistor—10 ohms, ½ watt (R12) |
| 30681 | Resistor—470 ohms, 1 watt (R10) |
| 3078 | Resistor—10,000 ohms, ½ watt (R13) |
| 31389 | Resistor—Voltage divider, 12,000 ohms, 3½ watts (R3) |
| 13998 | Resistor—22,000 ohms, ½ watt (R15) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12266 | Resistor—39,000 ohms, ½ watt (R14) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R5) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 13730 | Resistor—1 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R8) |
| 14343 | Retainer—Retaining ring to hold tuning knob shaft |
| 32848 | Screw—No. 8-32 square head set screw for drum |
| 32932 | Shaft—Tuning knob shaft |
| 31365 | Socket—Dial lamp socket (insulated) |
| 32950 | Socket—Magic Eye socket and bracket |
| 31251 | Socket—Octal base tube socket |
| 31418 | Spring—Drive cord tension spring |
| 33113 | Switch—Radio-Record switch |
| 32929 | Switch—Range switch |
| 32827 | Switch—Voltage change switch |
| 14376 | Transformer—First i-f transformer (L8, L9, C12, C13) |
| 32825 | Transformer—Second i-f transformer (L10, L11, C14, C15, C18, R5) |
| 32910 | Transformer—Power transformer, 105-120 volt, 25-60 cycle |
| 32911 | Transformer—Power transformer 105-125 volts, 50-60 cycle |
| 32852 | Transformer—Power transformer 105-120 and 210-240 volts, 50-60 cycles |

| STOCK No. | DESCRIPTION |
|---|---|
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 32863 | Cam—Cam assembly comprising main and auxiliary cams, hub and set screws |
| 32864 | Lever—Actuating lever with roller and mercury tube clip |
| 14195 | Screw—No. 10-32 x 5/16 cone pointed set screw for cam hub |
| 32869 | Screw—No. 10-32 x 5/16 set screw for cam hub (Pkg. of 10) |
| 32868 | Spring—Actuating lever tension spring (Pkg. of 10) |
| 32867 | Spring—Cam tension spring—Pkg. of 10 |
| 32865 | Support—Switch support and terminal board |
| 32866 | Switch—Mercury tube with leads (S2) |
| 31608 | Washer—"C" washer for actuating lever shaft |
| | **MOTOR ASSEMBLIES** |
| 32650 | Field—Motor field coils and laminations, 110 volts, 50 cycle |
| 32336 | Field—Motor field coils and laminations, 110 volts, 60 cycle |
| 33220 | Motor—105-125 volts, 50 cycles—less mounting plate (M1) |
| 33219 | Motor—105-125 volts, 60 cycles—less mounting plate (M1) |
| 33361 | Shaft—Turntable spindle shaft and gear—50 cycle |
| 33360 | Shaft—Turntable spindle shaft and gear—60 cycle |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33125 | Arm—Pickup arm complete—less crystal cartridge |
| 33126 | Base—Pickup arm base and pivot shaft |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 33123 | Damper—Viscoloid damper for pickup armature |
| 33529 | Screw—Pickup needle screw—Pkg. of 5 |
| | **SPEAKER ASSEMBLIES (RL—79—2)** |
| 32907 | Cap—Speaker cone center dust cap |
| 32903 | Coil—Speaker field coil (L12) |
| 32906 | Coil—Speaker hum neutralizing coil (L13) |
| 5118 | Plug—3 prong male for speaker |
| 32933 | Speaker—Complete |
| 32905 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33531 | Cup—Needle cup |
| 31464 | Damper—Turntable damper and drive sleeve |
| 32837 | Dial—Dial scale |
| 33415 | Escutcheon—Dial escutcheon |
| 13085 | Hinge—Cabinet lid hinge |
| 31802 | Knob—Radio-Record switch knob |
| 32937 | Knob—Range switch knob |
| 33029 | Knob—Tone control and switch knob |
| 32935 | Knob—Tuning knob |
| 32936 | Knob—Volume control knob |
| 33530 | Mounting—Pickup arm rubber mounting, washer, and nut |
| 30870 | Plug—2 prong male for motor leads |
| 32610 | Rest—Rubber rest for pickup |
| 4982 | Spring—Retaining spring for tuning knob |
| 30330 | Spring—Retaining spring for tone control knob |
| 14270 | Spring—Retaining spring for volume control, range switch, or radio-record switch knob |
| 31164 | Support—Cabinet lid support |
| 33113 | Switch—Radio-Record switch |
| 33532 | Turntable—10 in. |

**2nd Production:**

The following parts are used in the revised circuit;

| Stock No. | |
|---|---|
| 12725 | Capacitor—150 mmfd. (C35) |
| 30303 | Capacitor—.0035 mfd. (C36) |
| 30963 | Resistor—820,000 ohms, ½-watt (R16) |
| 12286 | Resistor—56,000 ohms, ½-watt (R17) |
| 14983 | Resistor—330,000 ohms, ½-watt (R18) |
| 32743 | Switch—Radio-phono switch |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 35441 | Cone—Speaker cone and voice coil |
| 32953 | Frame—Dial frame and holder, comprising dial color plate, holder, mounting, brackets, "Magic Eye" cap, indicator, and carriage |

# MODEL U-50

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC—414—C)** |
| 32834 | Bracket—Drive bracket and 1 pulley assembled |
| 33411 | Bracket—Drive bracket and 3 pulleys assembled |
| 12581 | Cap—Top shield cap for i-f transformer |
| 32830 | Capacitor—2-gang trimmer, 2-20 mmfd. each section (C26, C27) |
| 32829 | Capacitor—3-gang trimmer, 5-60 mmfd. each section (C5, C6, C8) |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30949 | Capacitor—56 mmfd. (C14, C15) |
| 14262 | Capacitor—109 mmfd. (C12, C13) |
| 32238 | Capacitor—110 mmfd. (C18) |
| 30232 | Capacitor—220 mmfd. (C3) |
| 12952 | Capacitor—330 mmfd. (C19) |
| 13894 | Capacitor—390 mmfd. (C33) |
| 12537 | Capacitor—560 mmfd. (C9, C34) |
| 31403 | Capacitor—3300 mmfd. (C7) |
| 31405 | Capacitor—6000 mmfd. (C10) |
| 33584 | Capacitor—.005 mfd. (C30) |
| 4838 | Capacitor—.005 mfd. (C20, C21, C29) |
| 14393 | Capacitor—.01 mfd. (C16) |
| 11315 | Capacitor—.015 mfd. (C31, C32) |
| 4870 | Capacitor—.025 mfd. (C22) |
| 4839 | Capacitor—0.1 mfd. (C17) |
| 32240 | Capacitor—Electrolytic, 2 sections 10 mfd., 400 V., and one section 20 mfd., 25 V. (C23, C24, C25) |
| 32821 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil (L5, L6, L7) |
| 32817 | Condenser—2-gang variable tuning (C1, C2, C11) |
| 33409 | Control—Volume control, tone control, and power switch (R6, R9, S1) |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 32835 | Drum—Drive cord drum with set screw |
| 11891 | Lamp—Dial lamp—Mazda No. 44 |
| 30868 | Plug—2-contact female motor cable plug |
| 5119 | Plug—3-contact female speaker cable plug |
| 13988 | Resistor—10 ohms, ½ watt (R12) |
| 30681 | Resistor—470 ohms, 1 watt (R10) |
| 3078 | Resistor—10,000 ohms, ½ watt (R13) |
| 31389 | Resistor—12,000 ohms, 3½ watts (R3) |
| 13998 | Resistor—22,000 ohms, ½ watt (R15) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12266 | Resistor—39,000 ohms, ½ watt (R14) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R5) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 11668 | Resistor—5.6 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R8) |
| 14343 | Retainer—Retaining ring to hold tuning knob shaft |
| 32848 | Screw—No. 8-32 square head set screw for drum |
| 33412 | Shaft—Tuning knob shaft |
| 31365 | Socket—Dial lamp socket (insulated) |
| 31251 | Socket—Octal base tube socket |
| 31418 | Spring—Drive cord tension spring |
| 33413 | Switch—Radio-Record switch (S4) |
| 33410 | Switch—Range switch (S2, S3) |
| 14376 | Transformer—First i-f transformer (L8, L9, C12, C13) |
| 32825 | Transformer—Second i-f transformer (L10, L11, C14, C15, C18, R5) |
| 33112 | Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33216 | Arm—Pickup arm—less crystal, needle screw, and cable |
| 33218 | Base—Pickup arm mounting base and pivot shaft |
| 33217 | Crystal—Pickup crystal cartridge and needle screw |
| 33114 | Damper—Viscoloid damper for pickup armature |
| 31160 | Screw—Pickup needle screw |
| | **MOTOR ASSEMBLIES** |
| 32650 | Field—Motor field coils and laminations, 110 volts, 50 cycle |
| 32336 | Field—Motor field coils and laminations, 110 volts, 60 cycle |
| 33220 | Motor—105-125 volts, 50 cycles—less mounting plate (M1) |
| 33219 | Motor—105-125 volts, 60 cycles—less mounting plate (M1) |
| 33361 | Shaft—Turntable spindle shaft and gear—50 cycle |
| 33360 | Shaft—Turntable spindle shaft and gear—60 cycle |
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 33221 | Cam—Cam assembly comprising main and auxiliary cams, hub, and set screws |
| 32864 | Lever—Actuating lever with roller and mercury tube clip |
| 14195 | Screw—No. 10-32 x 5/16 cone pointed set screw for cam hub |
| 32869 | Screw—No. 10-32 x 5/16 set screw for cam hub |
| 32868 | Spring—Actuating lever tension spring |
| 32867 | Spring—Cam tension spring |
| 32865 | Support—Switch support and terminal board |
| 32866 | Switch—Mercury tube with leads (S5) |
| 31608 | Washer—"C" washer for actuating lever shaft |
| | **SPEAKER ASSEMBLIES (84604-1)** |
| 33406 | Cone—Speaker cone and voice coil (L14) |
| 5118 | Plug—3-contact male for speaker |
| 33222 | Speaker complete |
| 33407 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 10290 | Cap—Ventilating cap |
| 31464 | Damper—Damper plate and rubber sleeve for spindle |
| 32837 | Dial—Dial scale (glass) |
| 33415 | Escutcheon—Dial scale escutcheon |
| 11771 | Foot—Cabinet foot |
| 33416 | Frame—Dial frame, support, color plate, and mounting brackets—less pointer and carriage, and dial scale |
| 32633 | Handle—Carrying handle |
| 13085 | Hinge—Cabinet lid hinge |
| 11865 | Holder—Needle cord holder |
| 33468 | Knob—Radio-Record switch knob |
| 33506 | Knob—Range switch knob (small) |
| 33470 | Knob—Tone control and switch knob (small dual) |
| 33505 | Knob—Tuning knob (large) |
| 33471 | Knob—Volume control knob (large dual) |
| 33223 | Mounting—Complete set motor mounting screws, washers, and spacers |
| 31054 | Mounting—Pickup arm mounting cushion, washers, and nut |
| 30870 | Plug—2-contact male for motor leads |
| 31048 | Plug—2-contact male plug for phono. cable |
| 32846 | Rod—Indicator slide rod |
| 33418 | Spring—Indicator tension spring |
| 30330 | Spring—Retaining spring for tone control knob |
| 4982 | Spring—Retaining spring for tuning knob |
| 14270 | Spring—Retaining spring for volume control, range switch, or radio-record switch knob |
| 33364 | Support—Cabinet lid support (LH) |
| 33673 | Support—Pickup arm support |
| 33414 | Turntable |

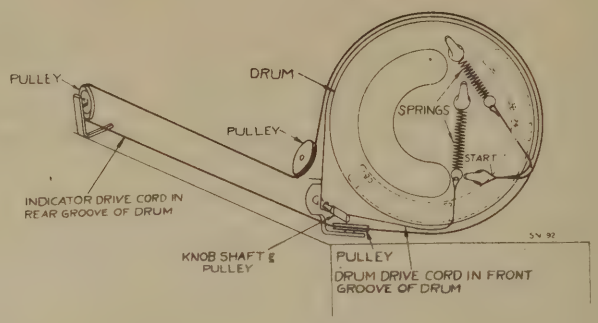
**Add Stock No.**

34254 Indicator—Dial scale pointer and carriage (Model U-50)

# MODEL 5Q6

## Chassis No. RC-477A

## Five-Tube, Three-Band, AC-DC, Superheterodyne Receiver




## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22 mc (42.8-13.6 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SA7 ..... Detector-Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6SQ7 ... 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-25L6-G ..... Power Output
(5) RCA-25Z6-G ..... Rectifier
Ballast Tube ..... RCA Stock No. 32849 for 210-250 volt operation.

PILOT LAMP ..... Mazda No. 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING
(210-250 Volt Operation)

| | |
|---|---|
| Undistorted | 1.5 watts |
| Maximum | 2.7 watts |

LOUDSPEAKER (84557-2)

| | |
|---|---|
| Type | 5-inch |
| V. C. Impedance | 2.2 ohms at 400 cycles |

POWER SUPPLY RATINGS

| | |
|---|---|
| 210-250 volts, 50-60 cycles | 125 watts |
| 210-250 volts, direct current | 125 watts |

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver ground lead (black), and keep the output as low as possible to avoid a-v-c action.

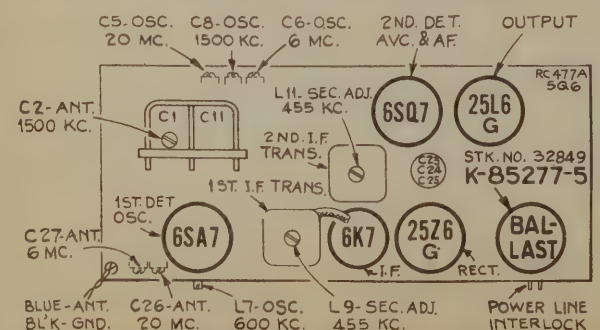
**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of a set screw, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



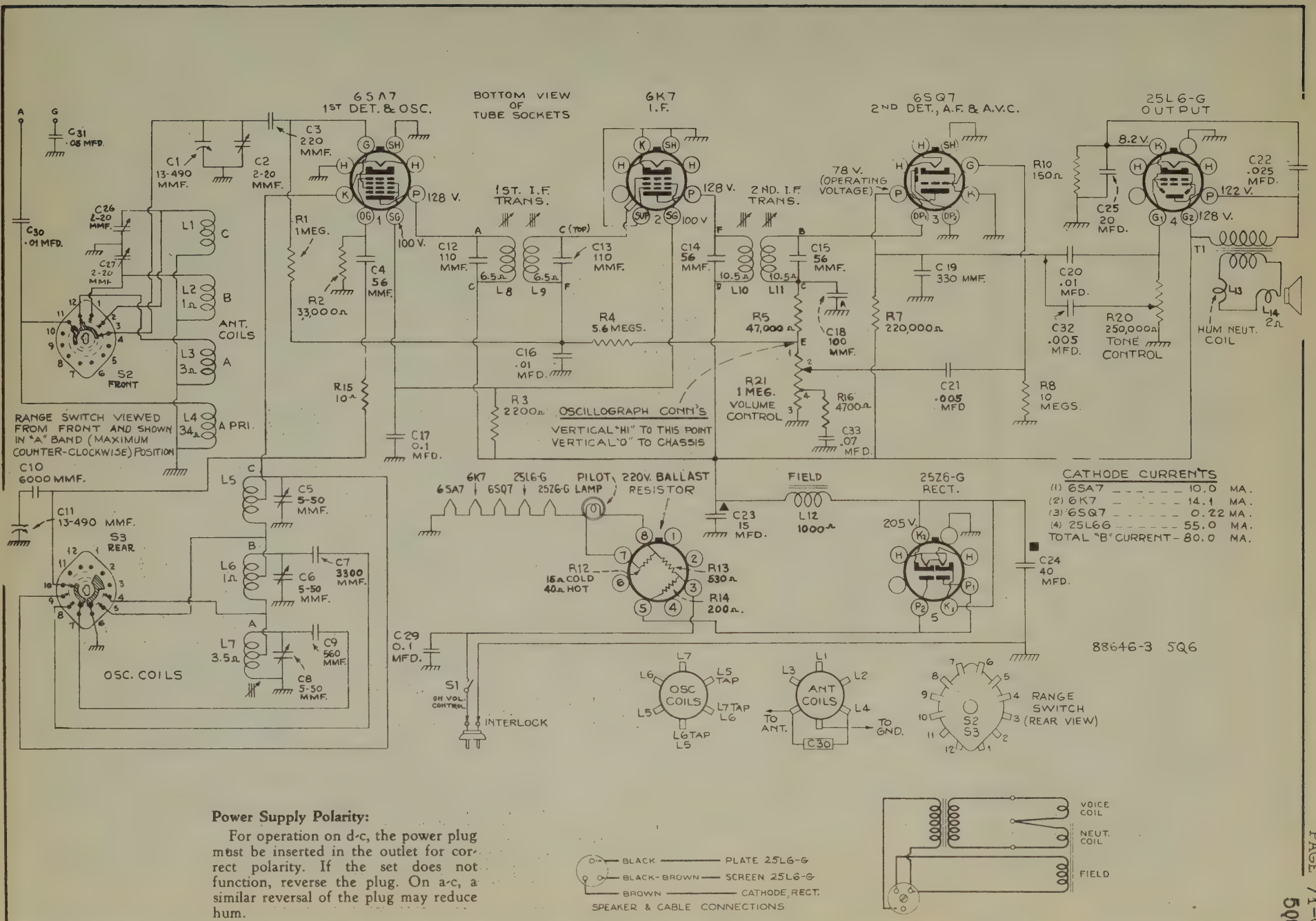

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" Band quiet point between 550-750 kc | L10 and L11 (2nd I.F. trans.) |
| 2 | Tuning condenser stator (osc.) in series with .01 mfd. ** | 455 kc | | L8 and L9 (1st I.F. trans.) |
| 3 | Antenna lead in series with 200 mmfd. | 600 kc | 600 kc (33°) "A" Band | L7† |
| 4 | | 1,500 kc | 1,500 kc (152.4°) "A" Band | C2 (ant.) C8 (osc.) |
| 5 | Repeat steps 3 and 4 | | | |
| 6 | Antenna lead in series with 400 ohms | 20 mc | 20 mc (155.4°) "C" Band | C5 (osc.)* C26 (ant.) |
| 7 | | 6 mc | 6 mc (148°) "B" Band | C6 (osc.)* C27 (ant.) |
| 8 | Antenna lead in series with 200 mmf. | 1,500 kc | 1,500 kc (152.4°) "A" Band | C8 (osc.) |

* Use minimum capacity peak if two peaks can be obtained.

† Rock gang condenser slightly while adjusting L7.

** Make test-oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.

**Note.**—Oscillator tracks 455 kc above signal on all bands.



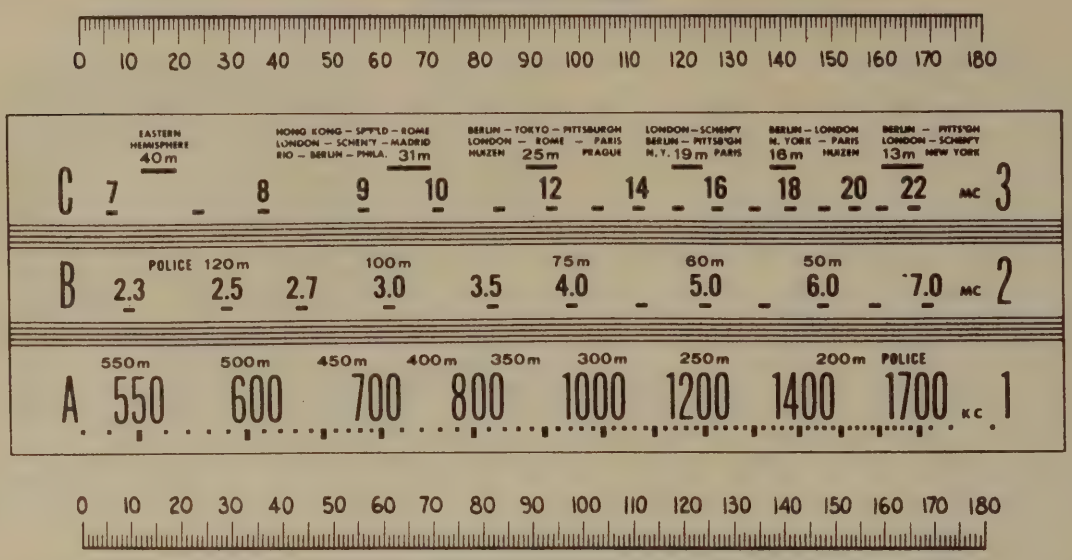

CATHODE CURRENTS

| | | |
|---|---|---|
| (1) 6SA7 | 10.0 | MA. |
| (2) 6K7 | 14.1 | MA. |
| (3) 6SQ7 | 0.22 | MA. |
| (4) 25L6G | 55.0 | MA. |
| TOTAL "B" CURRENT - | 80.0 | MA. |

**Power Supply Polarity:**

For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, a similar reversal of the plug may reduce hum.

## Calibration Scale


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
EASTERN HEMISPHERE 40m
HONG KONG – SPT'LD – ROME LONDON – SCHENY – MADRID RIO – BERLIN – PHILA. 31m
BERLIN – TOKYO – PITTSBURGH LONDON – ROME – PARIS HUIZEN 25m PRAGUE
LONDON – SCHENY BERLIN – PITTSB'GH N. Y. 19m PARIS
BERLIN – LONDON N. YORK – PARIS 16m HUIZEN
BERLIN – PITTS'GH LONDON – SCHENY 13m NEW YORK
C 7 8 9 10 12 14 16 18 20 22 MC 3
POLICE 120m 100m 75m 60m 50m
B 2.3 2.5 2.7 3.0 3.5 4.0 5.0 6.0 7.0 MC 2
550m 500m 450m 400m 350m 300m 250m 200m POLICE
A 550 600 700 800 1000 1200 1400 1700 KC 1
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

# REPLACEMENT PARTS

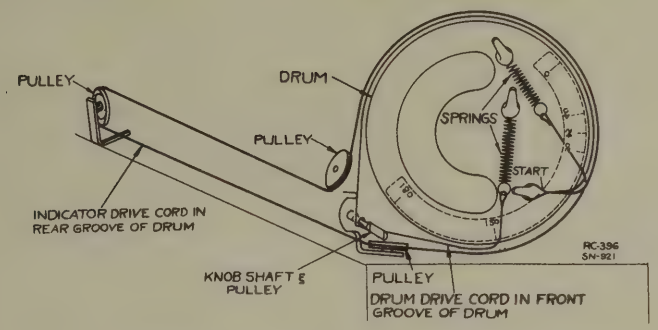
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-477A)** |
| 32849 | Ballast—Ballast resistor (R12, R13, R14) |
| 32832 | Bracket—Drive bracket, pulleys and tuning knob—shaft complete |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30949 | Capacitor—56 mmfd. (C14, C15) |
| 14262 | Capacitor—110 mmfd. (C12, C13) |
| 32238 | Capacitor—110 mmfd. (C18) |
| 12694 | Capacitor—220 mmfd. (C3) |
| 12952 | Capacitor—330 mmfd. (C19) |
| 12537 | Capacitor—560 mmfd. (C9) |
| 31403 | Capacitor—3,300 mmfd. (C7) |
| 31405 | Capacitor—6,000 mmfd. (C10) |
| 32830 | Capacitor—Trimmer capacitor bank, 2 sections 2-20 mmfd. (C26, C27) |
| 32829 | Capacitor—Trimmer capacitor bank, 3 sections 5-60 mmfd. (C5, C6, C8) |
| 4838 | Capacitor—.005 mmfd. (C21, C32) |
| 14393 | Capacitor—.01 mfd. (C16, C20, C30) |
| 4870 | Capacitor—.025 mfd. (C22) |
| 4886 | Capacitor—.05 mfd. (C31) |
| 14626 | Capacitor—.07 mfd. (C33) |
| 4839 | Capacitor—0.1 mfd. (C17, C29) |
| 32851 | Capacitor—Electrolytic comprising 1 section of 40 mfd. 1 section of 15 mfd. and 1 section of 20 mfd. (C23, C24, C25) |
| 32821 | Coil—Antenna coil A, B, C bands (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil A, B, C bands (L5, L6, L7) |
| 32817 | Condenser—2 gang variable condenser (C1, C2, C11) |
| 34224 | Control—Tone control (R20) |
| 34851 | Control—Volume control and power switch (R21, S1) |
| 32634 | Cord—Variable tuning condenser drive drum cord |
| 32635 | Cord—Indicator drive cord |
| 32713 | Core—Core and stud for oscillator coil adjustment |
| 32835 | Drum—Drive cord drum |
| 31480 | Lamp—Dial lamp |
| 5119 | Plug—3-contact female for speaker cable |
| 32834 | Pulley—Drive cord pulley and mounting bracket (1 pulley) |
| 32849 | Resistor—Ballast resistor (R12, R13, R14) |
| 13988 | Resistor—10 ohms, ½ watt (R15) |
| 30880 | Resistor—150 ohms, ½ watt (R10) |
| 3526 | Resistor—2,200 ohms, ½ watt (R3) |
| 30146 | Resistor—4,700 ohms, ½ watt (R16) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R5) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 11668 | Resistor—5.6 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R8) |
| 32848 | Screw—No. 8-32 square head set screw for drum |
| 31365 | Socket—Dial lamp insulated socket |
| 31251 | Socket—Octal base tube socket |
| 31418 | Spring—Drive cord or pointer cable tension spring |
| 32819 | Switch—Range switch (S2, S3) |
| 14376 | Transformer—First i.f. transformer (L8, L9, C12, C13) |
| 32825 | Transformer—Second i.f. transformer (L10, L11, C14, C15, C18, R5) |
| 32849 | Tube—Ballast resistor (R12, R13, R14) |
| | **SPEAKER ASSEMBLIES (84557-2)** |
| 32923 | Coil—Speaker field coil (L12) |
| 32922 | Cone—Speaker cone and voice coil in metal housing (L14) |
| 5118 | Plug—3-contact male for speaker |
| 32924 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32837 | Dial—Glass dial scale |
| 32845 | Frame—Dial frame complete with back plate shaft retainer, dial bracket and lamp bracket |
| 32847 | Indicator—Station selector indicator and carriage |
| 32844 | Knob—Black range switch knob |
| 33085 | Knob—Black-tone control or tuning knob |
| 32842 | Knob—Black volume control and power switch knob |
| 32839 | Knob—Brown tone control or tuning knob |
| 33090 | Knob—Ivory range switch knob |
| 33089 | Knob—Ivory volume control and power switch knob |
| 4393 | Screw—No. 8-32 set screw for knobs |
| 32846 | Shaft—Indicator guide shaft |
| 14270 | Spring—Retaining spring for knobs, Stock No. 32839 and 33085 |

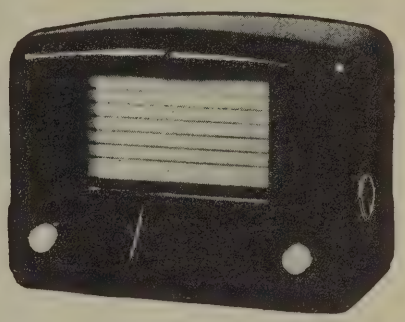
# MODEL 5Q8

## Chassis No. RC-396B RC-477B

## Five-Tube, Three-Band, AC-DC, Superheterodyne Receiver




*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*



(Model 5Q8E is brown; 5Q8F is black; 5Q8G is ivory; and 5Q8H is maroon.)

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave (X) | 145-405 kc (2069-740 m) |
| Medium Wave (A) | 540-1720 kc (555-174 m) |
| Short Wave (C) | 5.8-18 mc (51.7-16.6 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SA7 | Detector-Oscillator |
| (2) RCA-6K7 | I-F Amplifier |
| (3) RCA-6SQ7 | 2nd Detector, A.V.C., and A-F Amplifier |
| (4) RCA-25L6-G | Power Output |

PILOT LAMP ..... Mazda No. 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING

| | |
|---|---|
| (210-250 Volt Operation) | |
| Undistorted | 1.5 watts |
| Maximum | 2.7 watts |
| (105-125 Volt Operation) | |
| Undistorted | 1.7 watts |
| Maximum | 2.9 watts |

POWER SUPPLY RATINGS

| | |
|---|---|
| 105-125 volts, AC-DC | 65 watts |
| 210-250 volts, AC-DC | 125 watts |

LOUDSPEAKER

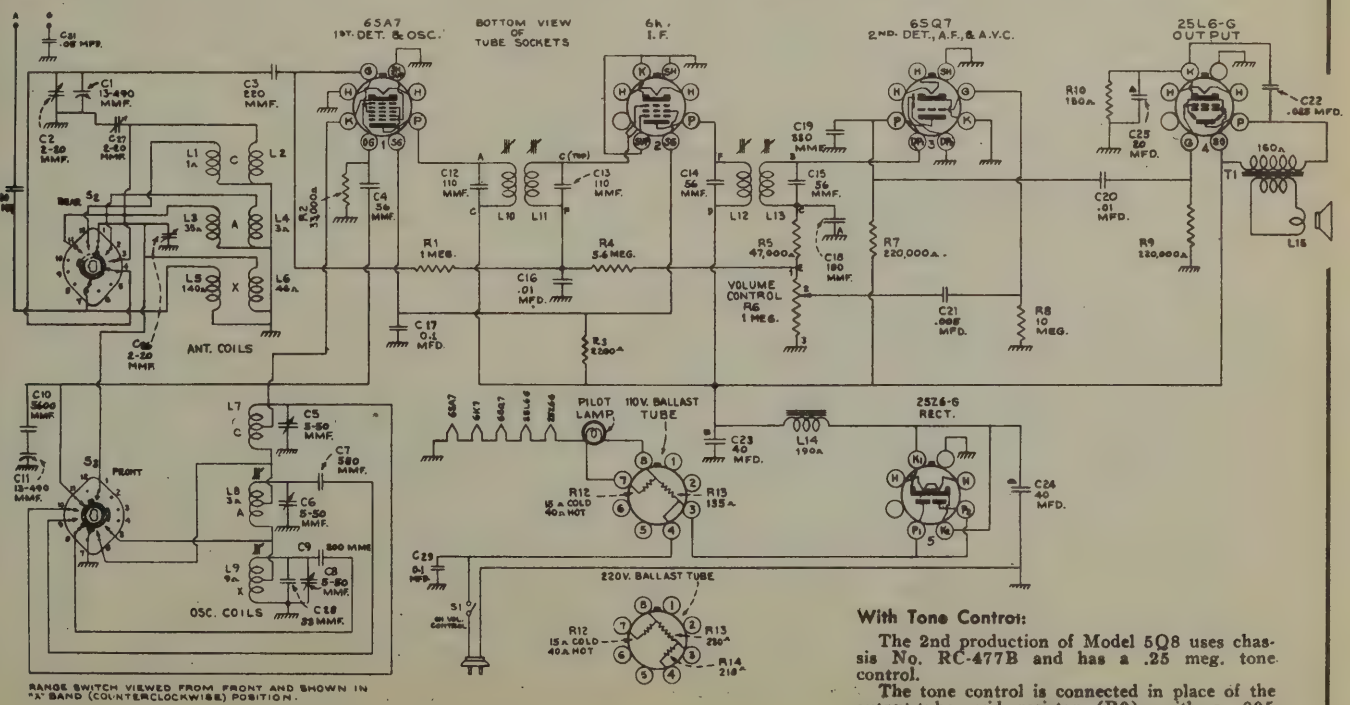
| | |
|---|---|
| Type | 5-inch |
| V. C. Impedance | 3.0 ohms at 400 cycles |

(5) RCA-25Z6-G ..... Rectifier

Ballast Tubes ..... RCA Stock No. 32544 for 105-125 volt operation; RCA Stock No. 32850 for 210-250 volt operation.

**Precautionary Lead Dress:**

1. Lead from 2nd I-F transformer to volume control should be kept close to the chassis and dressed against front apron.
2. C-10 should be dressed away from the antenna section of the variable condenser (C-1).

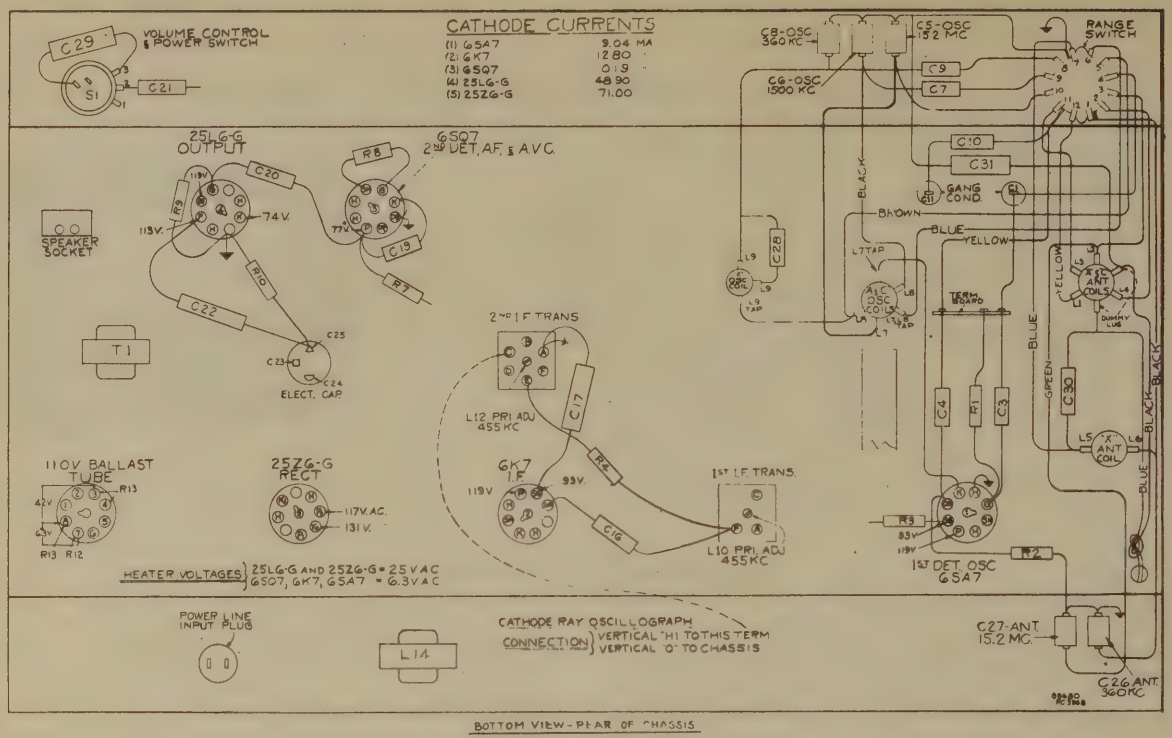

6SA7 1ST. DET. & OSC.
BOTTOM VIEW OF TUBE SOCKETS
6K7 I. F.
6SQ7 2ND. DET., A.F., & A.V.C.
25L6-G OUTPUT
ANT. COILS
OSC. COILS
VOLUME CONTROL R6 1 MEG.
PILOT LAMP
110V. BALLAST TUBE
220V. BALLAST TUBE
25Z6-G RECT.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (COUNTERCLOCKWISE) POSITION.

*Schematic Circuit Diagram*

**With Tone Control:**

The 2nd production of Model 5Q8 uses chassis No. RC-477B and has a .25 meg. tone control.

The tone control is connected in place of the output-tube grid resistor (R9), with a .005 mfd. capacitor connected from the arm of the tone control to the 1st-audio plate.




*R-F Wiring Diagram and Socket Voltages*

## Alignment Procedure

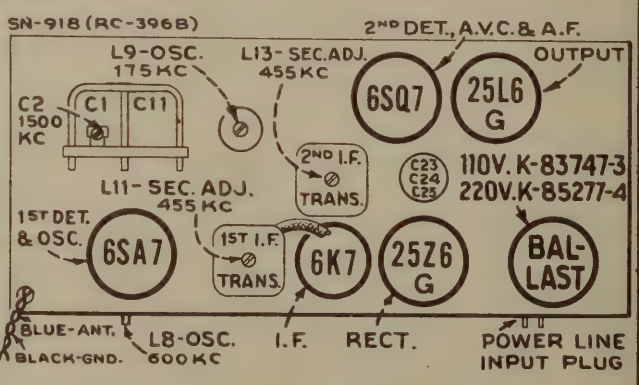
| STEPS | CONNECT THE HIGH SIDE OF THE TEST-OSC. TO - | TUNE TEST-OSC TO - | TURN RADIO DIAL TO | ADJUST THE FOLLOWING FOR MAX. PEAK OUTPUT |
|---|---|---|---|---|
| 1 | 6K7 I-F grid in series with .01 mfd. | 455 kc | "A" Band Quiet Point | L12 and L13 (2nd I-F Trans.) |
| 2 | 6SA7 det. grid in series with .01 mfd. | | | L10 and L11 (1st I-F Trans.) |
| 3 | Ant. term. in series with 200 mmf. | 1500 kc | (152.4°) "A" Band | C6 (osc.) C2 (ant.) |
| 4 | Ant. term. in series with 200 mmf. | 600 kc | (33°) "A" Band | L8 (osc.) |
| 5 | *Repeat steps 3 and 4* | | | |
| 6 | Ant. term. in series with 200 mmf. | 360 kc | (151.5°) "X" Band | C8 (osc.) C28 (ant.) |
| 7 | Ant. term. in series with 200 mmf. | 175 kc | (53.3°) "X" Band | L9 (osc.) |
| 8 | *Repeat steps 6 and 7* | | | |
| 9 | Ant. term. in series with 300 ohms | 15.2 mc | (147.2°) "C" Band | C5 (osc.) ▲ C27 (ant.) |
| 10 | Ant. term. in series with 200 mmf. | 360 kc | (151.5°) "X" Band | C8 (osc.) |
| 11 | Ant. term. in series with 200 mmf. | 1500 kc | (152.4°) "A" Band | C6 (osc.) |

▲ *Use minimum capacity peak if two can be obtained.*

NOTE: *Oscillator tracks above signal on all bands.*

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.




*Tube and Trimmer Locations*

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

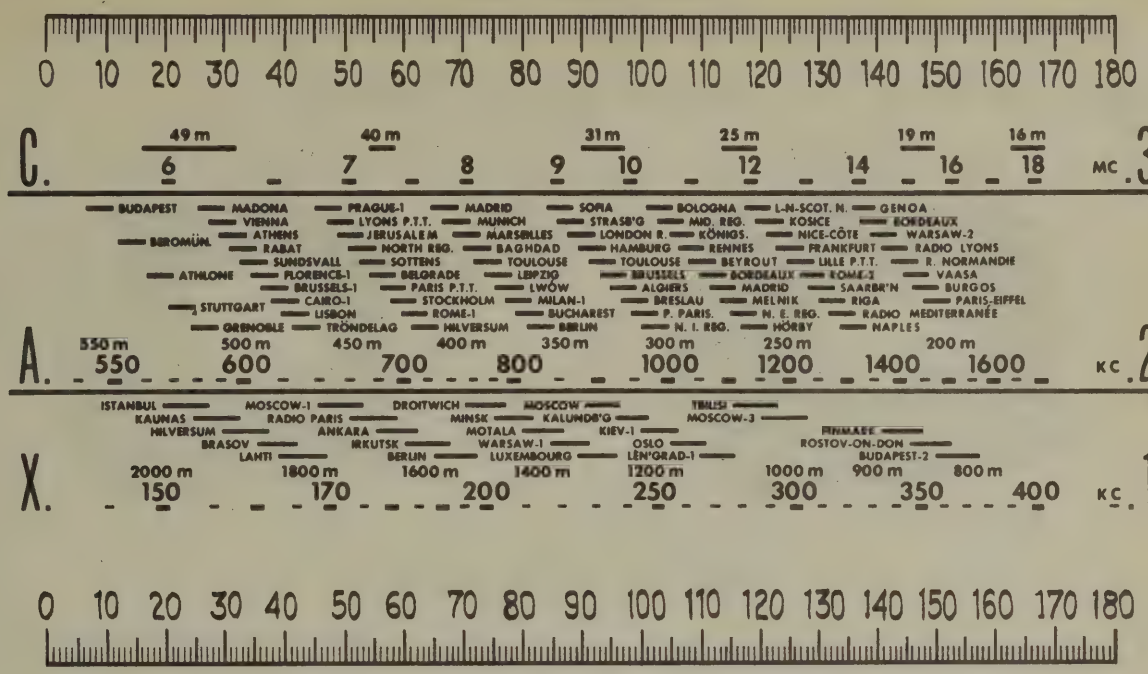
**Calibration Scale On Indicator-Drive-Cord Drum.**—In most cases it will not be necessary to remove the chassis from the dial scale for alignment, allowing the dial scale to be used for calibration. However, if alignment is made with the receiver chassis removed, the calibration scale attached to the rear of the drum which is mounted on the front shaft of the gang condenser must be used. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

## Calibration Scale


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
C.
49 m 40 m 31 m 25 m 19 m 16 m
6 7 8 9 10 12 14 16 18 MC .3
BUDAPEST MADONA PRAGUE-1 MADRID SOFIA BOLOGNA L-N-SCOT. N. GENOA
VIENNA LYONS P.T.T. MUNICH STRASB'G MID. REG. KOSICE BORDEAUX
ATHENS JERUSALEM MARSEILLES LONDON R. KÖNIGS. NICE-CÔTE WARSAW-2
BROMÖM RABAT NORTH REG. BAGHDAD HAMBURG RENNES FRANKFURT RADIO LYONS
SUNDSVALL SOTTENS TOULOUSE TOULOUSE BEYROUT LILLE P.T.T. R. NORMANDIE
ATHLONE FLORENCE-1 BELGRADE LEIPZIG BRUSSELS BORDEAUX ROME-1 VAASA
BRUSSELS-1 PARIS P.T.T. LWÓW ALGIERS MADRID SAARBR'N BURGOS
STUTTGART CAIRO-1 STOCKHOLM MILAN-1 BRESLAU MELNIK RIGA PARIS-EIFFEL
LISBON ROME-1 BUCHAREST P. PARIS N. E. REG. RADIO MEDITERRANÉE
GRENOBLE TRÖNDELAG HILVERSUM BERLIN N. I. REG. HÖRBY NAPLES
A.
550 m 500 m 450 m 400 m 350 m 300 m 250 m 200 m
550 600 700 800 1000 1200 1400 1600 KC .2
ISTANBUL MOSCOW-1 DROITWICH MOSCOW TBILISI
KAUNAS RADIO PARIS MINSK KALUNDB'G MOSCOW-3
HILVERSUM ANKARA MOTALA KIEV-1 RIMMARE
BRASOV IRKUTSK WARSAW-1 OSLO ROSTOV-ON-DON
LAHTI BERLIN LUXEMBOURG LÉN'GRAD-1 BUDAPEST-2
X.
2000 m 1800 m 1600 m 1400 m 1200 m 1000 m 900 m 800 m
150 170 200 250 300 350 400 KC .1
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*

**Ballast Resistor:**

In Model 5Q8 Service Data, change Stock No. 32544 to MI-8115 (135K1A). No. 32544 (BK-49B) may be used if terminals 3 and 4 are connected by a jumper.

# REPLACEMENT PARTS

Stock No.
34224 Control—Tone control, 250,000 ohms
4838 Capacitor—.005 mfd.

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

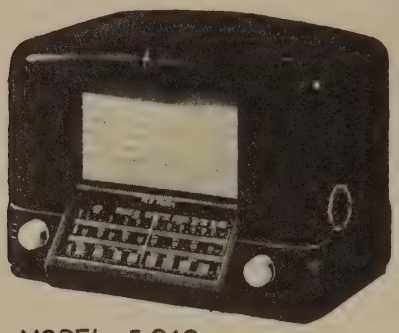
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC396B)** |
| | Ballast—Ballast resistor tube, 110 volt operation (R12, R13) |
| 32850 | Ballast—Ballast resistor tube, 220 volt operation (R12, R13, R14) |
| 32832 | Bracket—Drive bracket pulleys, and tuning knob shaft complete |
| 32635 | Cable—Pointer drive cable |
| 12581 | Cap—First I.F. transformer shield cap |
| 12948 | Capacitor—33 mmfd. (C28) |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30949 | Capacitor—56 mmfd. (C14, C15) |
| 14262 | Capacitor—109 mmfd. (C12, C13) |
| 32238 | Capacitor—110 mmfd. (C18) |
| 30232 | Capacitor—200 mmfd. (C9) |
| 12694 | Capacitor—220 mmfd. (C3) |
| 12952 | Capacitor—330 mmfd. (C19) |
| 32853 | Capacitor—580 mmfd. (C7) |
| 13895 | Capacitor—5,600 mmfd. (C10) |
| 32830 | Capacitor—Trimmer capacitor bank, 2 sections 2-20 mmfd. (C26, C27) |
| 32829 | Capacitor—Trimmer capacitor bank 3 sections 5-50 mmfd. (C5, C6, C8) |
| 14393 | Capacitor—.01 mfd. (C16, C20) |
| 4858 | Capacitor—.01 mfd. (C30) |
| 4870 | Capacitor—.025 mfd. (C22) |
| 4886 | Capacitor—.05 mfd. (C31) |
| 4839 | Capacitor—0.1 mfd. (C17, C29) |
| 32826 | Capacitor—Electrolytic, 2 sections 40 mfd., 1 section 20 mfd. (C23, C24, C25) |
| 32822 | Coil—Antenna coil—A, C bands (L1, L2, L3, L4) |
| 32823 | Coil—Antenna coil—X band (L5, L6) |
| 32707 | Coil—Oscillator coil—A, C bands (L7, L8) |
| 32931 | Coil—Oscillator coil—X band (L9) |
| 32817 | Condenser—2-gang variable condenser (C1, C2, C11) |
| 32634 | Cord—Drive cord |
| 32713 | Core—Core and stud for oscillator coil adjustment |
| 32835 | Drum—Drive cord drum |
| 31480 | Lamp—Dial lamp |
| 32828 | Plug—Line plug for rear of chassis |
| 32834 | Pulley—Pointer cord pulley and bracket |
| 32709 | Reactor—Filter reactor (L14) |
| | Resistor—Ballast resistor tube, 110 volt operation (R12, R13) |
| 32850 | Resistor—Ballast resistor tube, 220 volt operation (R12, R13, R14) |
| 30880 | Resistor—150 ohms, ½ watt (R10) |
| 3528 | Resistor—2,200 ohms, ½ watt (R3) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R5) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7, R9) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 11668 | Resistor—5.6 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R8) |
| 14887 | Retainer—Tuning knob shaft retainer |
| 32848 | Screw—No. 8-32 square head set screw for drum |
| 32833 | Shaft—Tuning knob shaft, eyelet and retainer |
| 31365 | Socket—Dial lamp insulated socket |
| 31251 | Socket—Octal base tube socket |
| 14278 | Socket—Phonograph socket |
| 30956 | Socket—Speaker socket |
| 31418 | Spring—Drive cord or pointer cable tension spring |
| 32820 | Switch—Range switch (S2, S3) |
| 14376 | Transformer—First i.f. transformer (L10, L11, C12, C13) |
| 32825 | Transformer—Second i.f. transformer (C14, C15, C18, R5, L12, L13) |
| 32029 | Transformer—Output transformer (T1) |
| | Tube—Ballast resistor tube, 110 volt operation (R12, R13) |
| 32850 | Tube—Ballast resistor tube, 220 volt operation (R12, R13, R14) |
| 32818 | Volume control and switch (R6, S1) |
| | **SPEAKER ASSEMBLIES (84556-1)** |
| 32926 | Cone—Cone and voice coil in metal housing (L15) |
| 5133 | Pin—Speaker lead pin |
| 32925 | Speaker—Complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32845 | Bracket—Dial mounting bracket and lamp bracket assembly—less pointer and pointer slide rods. |
| 32836 | Cord—Power cord complete with plugs |
| 32838 | Dial—Dial scale |
| 32844 | Knob—Black range switch knob |
| 33088 | Knob—Black tuning knob |
| 32842 | Knob—Black volume control knob |
| 32840 | Knob—Brown tuning knob |
| 33090 | Knob—Ivory range switch knob |
| 33092 | Knob—Ivory tuning knob |
| 33089 | Knob—Ivory volume control knob |
| 33565 | Knob—Maroon range switch |
| 33094 | Knob—Maroon tuning knob |
| 33564 | Knob—Maroon volume control |
| 32847 | Pointer—Dial pointer, carriage and clip |
| 32846 | Rod—Pointer slide rod |
| 4393 | Screw—No. 8-32 x 5/16 headless set screw for knob, Stock Nos. 32840, 32842, 32844, 33088, 33089, 33090, 33092 and 33094 |

# MODELS 5Q12, 5Q12A, 6Q8 AND 6QK8

RC-396D RC-396E RC-414B RC-414B

## Five-Tube, Three-Band, AC, Superheterodyne Receiver

REFER TO MODEL 5Q8 FOR ALIGNMENT PROCEDURE



MODEL 5Q12

MODEL 6Q8

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave (X) | 145-405 kc (2,069-740 m) |
| Medium Wave (A) | 540-1,720 kc (555-174 m) |
| Short Wave (C) | 5.8-18 mc (51.7-16.6 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | | | |
|---|---|---|---|
| (1) RCA-6SA7 | Detector-Oscillator | (4) RCA-6F6-G | Power Output |
| (2) RCA-6K7 | I-F Amplifier | (5) RCA-5Y3-G | Rectifier |
| (3) RCA-6SQ7 | 2nd Detector, A.V.C., and A-F Amplifier | (6) RCA-6U5/6G5 | Tuning Indicator |

PILOT LAMP ..... Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING
(105-125 Volt Operation)

| | |
|---|---|
| Undistorted | 1.5 watts |
| Maximum | 3.3 watts |

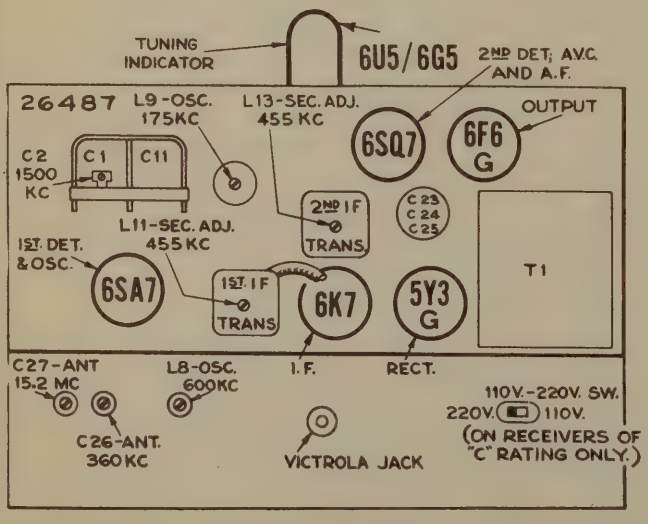
POWER SUPPLY RATINGS

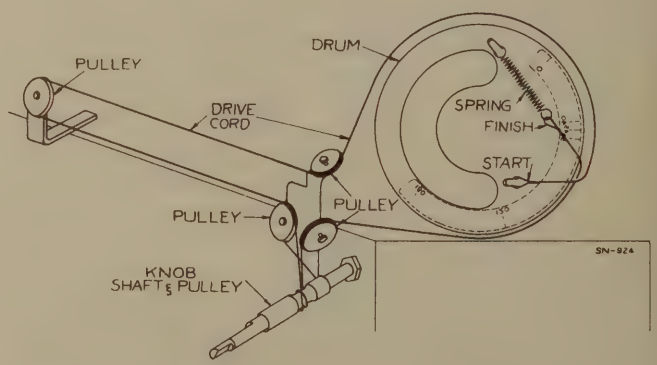
| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles |
| Rating B | 105-125 volts, 25 cycles, 75 watts |
| Rating C | 105-125; 200-250 volts, 50-60 cycles, 75 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | electrodynamic |
| V. C. Impedance | 3.4 ohms at 400 cycles |

Receivers having "C" power rating may be made to operate on either 110 or 220 volts, conversion from one voltage rating to the other being made by means of a switch at the back of the chassis.

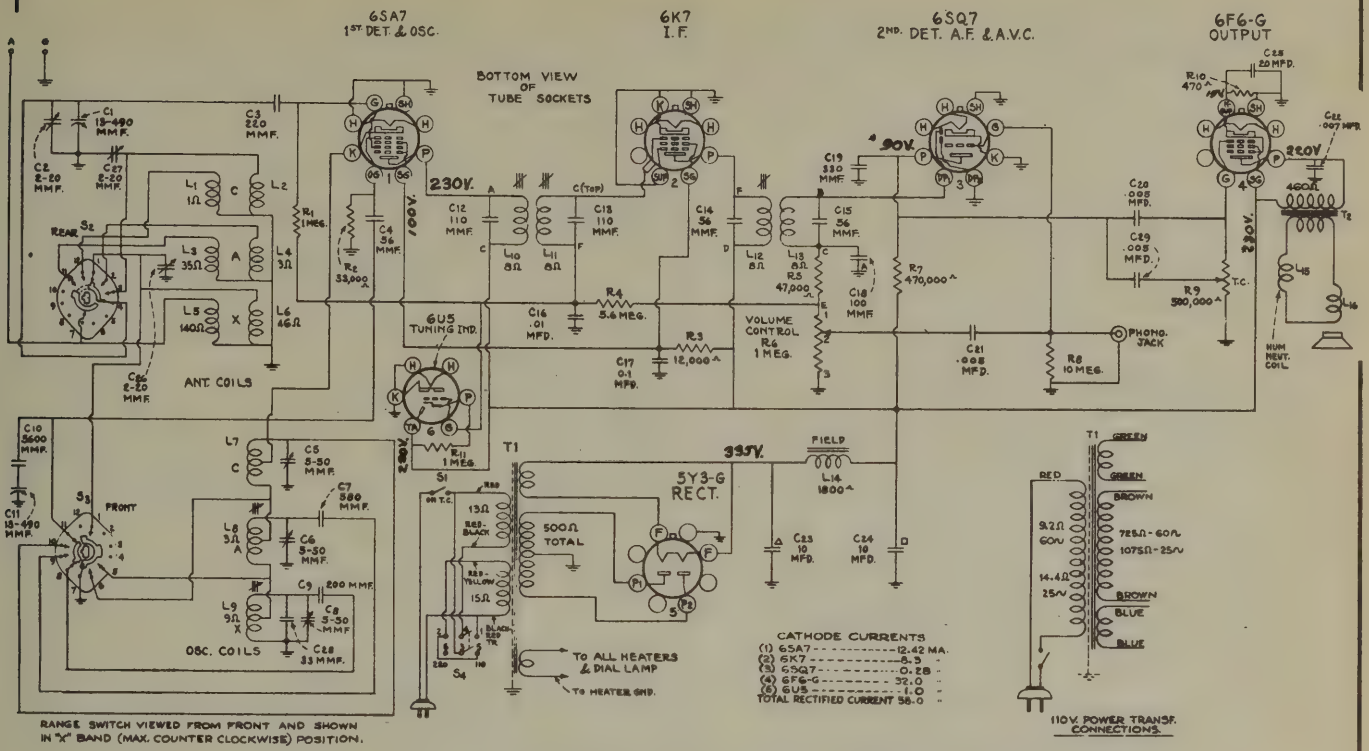


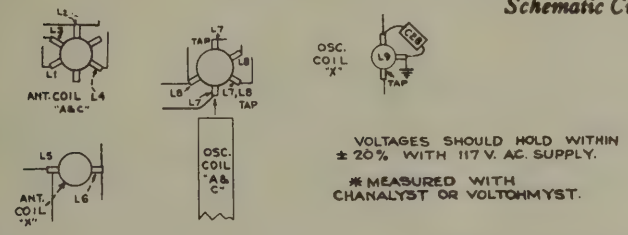

*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

*At Left—Tube and Trimmer Locations*

The electrical circuit of Model 5Q12 is similar to that of Model 6Q8 except in Model 5Q12, the tuning indicator (RCA-6U5-6G5) and its resistor (R11) are omitted




*Schematic Circuit Diagram* MODELS 6Q8 6QK8


ANT. COIL "A&C"
OSC. COIL "A&C"
ANT. COIL "X"
OSC. COIL "X"
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.

**Precautionary Lead Dress:**

1. Lead from 2nd I-F transformer to volume control should be kept close to the chassis and dressed against front apron.
2. C-10 should be dressed away from the antenna section of the variable condenser (C-1).

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **CHASSIS ASSEMBLIES (RC—414—B)** | | 5119 | Plug—8-contact female for speaker cable | |
| 32830 | Capacitor—2-gang trimmer, each section 2-20 mmfd. (C26, C27) | | 32834 | Pulley—Drive cord pulley and mounting bracket (1 pulley) | |
| 32829 | Capacitor—3-gang trimmer, each section 5-60 mmfd. (C5, C6, C8) | | 32951 | Pulley—Drive cord pulleys and mtg. bracket (3 pulleys) | |
| 12948 | Capacitor—33 mmfd. (C28) | | 30681 | Resistor—470 ohms, 1 watt (R10) | |
| 30949 | Capacitor—56 mmfd. (C14, C15) | | 31389 | Resistor—12,000 ohms, 3½ watts (R3) | |
| 12723 | Capacitor—56 mmfd. (C4) | | 12454 | Resistor—33,000 ohms, ½ watt (R2) | |
| 14262 | Capacitor—109 mmfd. (C12, C13) | | 5132 | Resistor—47,000 ohms, 1/10 watt (R5) | |
| 32238 | Capacitor—110 mmfd. (C18) | | 12285 | Resistor—470,000 ohms, ½ watt (R7) | |
| 30232 | Capacitor—200 mmfd. (C9) | | 12013 | Resistor—1 meg., 1/10 watt (R11) | |
| 12694 | Capacitor—220 mmfd. (C3) | | 13730 | Resistor—1 meg., ½ watt (R1) | |
| 12952 | Capacitor—330 mmfd. (C19) | | 11668 | Resistor—5.6 meg., ½ watt (R4) | |
| 32853 | Capacitor—580 mmfd. (C7) | | 13601 | Resistor—10 meg., ½ watt (R8) | |
| 13895 | Capacitor—5600 mmfd. (C10) | | 14343 | Retainer—Retaining ring for holding tuning knob shaft | |
| 4838 | Capacitor—.005 mfd. (C20, C21, C29) | | 32932 | Shaft—Tuning knob shaft | |
| 5148 | Capacitor—.007 mfd. (C22) | | 31365 | Socket—Dial lamp socket | |
| 14393 | Capacitor—.01 mfd. (C16) | | 32950 | Socket—Magic Eye socket and bracket | |
| 4839 | Capacitor—0.1 mfd. (C17) | | 31251 | Socket—Octal base tube socket | |
| 32240 | Capacitor—Electrolytic, 2 sections 10 mfd., one section 20 mfd. (C23, C24, C25) | | 14278 | Socket—Phonograph input socket | |
| 32822 | Coil—Antenna coil—A,C bands (L1, L2, L3, L4) | | 31418 | Spring—Tension spring for drive cord | |
| 32823 | Coil—Antenna coil—X band (L5, L6) | | 32930 | Switch—Range switch | |
| 32707 | Coil—Oscillator coil—A,C bands (L7, L8) | | 32827 | Switch—Voltage changeover switch (S4) | |
| 32931 | Coil—Oscillator coil—X band (L9) | | 14376 | Transformer—First i. f. transformer (L10, L11, C12, C13) | |
| 32817 | Condenser—2-gang variable (C1, C2, C11) | | 32825 | Transformer—Second i. f. transformer (R5, L12, L13, C14, C15, C18) | |
| 32634 | Cord—Drive cord | | 32910 | Transformer—Power transformer 105-120 volts, 25-50 cycles (T1) | |
| 32713 | Core—Adjustable core and stud assembly for oscillator coil | | 32911 | Transformer—Power transformer 105-120 volts, 50-60 cycles (T1) | |
| 32838 | Dial—Glass dial scale | | 32852 | Transformer—Power transformer 105-120, and 200-240 volts, 50-60 cycles (T1) | |
| 32835 | Drum—Variable condenser drive drum complete | | 32928 | Volume control and power switch (R6, S1) | |
| 11891 | Lamp—Dial lamp | | | | |
| 32953 | Plate—Dial back plate and pointer—less dial scale | | | | |

# REPLACEMENT PARTS—Continued

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (RL—79—2)** |
| 32907 | Cap—Speaker cone center dust cap..... |
| 32903 | Coil—Speaker field coil (L14)..... |
| 32906 | Coil—Speaker hum neutralizing coil (L15)..... |
| 35441 | Cone—Speaker cone and voice coil.. |
| 5118 | Plug—3-prong male for speaker..... |
| 32933 | Speaker complete ..... |
| 32905 | Transformer—Output transformer (T2)..... |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32838 | Dial—Dial scale and crystal..... |
| 32937 | Knob—Range switch knob (small)..... |
| 33029 | Knob—Tone control and switch knob (small).. |
| 32935 | Knob—Tuning knob (large)..... |
| 32936 | Knob—Volume control knob (large)..... |
| 4982 | Spring—Retaining spring for knob Stk. 32935.. |
| 14270 | Spring—Retaining spring for knob Stk. Nos. 32936 or 32937..... |
| 30330 | Spring—Retaining spring for knob Stk. 33029. |

## MODEL 6QK8, RC-414B

**Technical Information and Service Data:**

Refer to Service Data on Model 6Q8 and the following parts:

Stock No.

SPEAKER ASSEMBLY, 6QK8 (RL-70J-6)

| | |
|---|---|
| 31825 | Cap—Cone center dust cap..... |
| 11234 | Coil—Speaker field coil..... |
| 31275 | Cone—Speaker cone and voice coil.. |
| 5118 | Plug—3-prong male plug for speaker. |
| 14355 | Transformer—Output transformer... |

MISCELLANEOUS ASSEMBLIES

| | |
|---|---|
| 35043 | Dial—Glass dial scale, 6QK8.....: |

## MODEL 5Q12 (RC996D)

Replacement parts as for 6Q8 with the following exceptions.

| STOCK No. | RECEIVER ASSEMBLIES Add Stock No. |
|---|---|
| 34248 | Bracket - Drive bracket, pulleys and tuning knob shaft |
| 34247 | Control - Tone control |
| 32818 | Control - Volume control and power switch |
| 32835 | Cord - Indicator drive cord |
| 32820 | Switch - Range switch |
| | **MISCELLANEOUS ASSEMBLIES** |
| 34249 | Dial - Glass dial scale |
| 34221 | Frame - Dial frame less shaft, pointer and dial scale |
| 32847 | Indicator - Station selector pointer and carriage |
| 32844 | Knob - Black range switch knob |
| 32842 | Knob - Black volume control knob |
| 32839 | Knob - Brown tone control or tuning knob |
| 4393 | Screw - #8-32 headless set screw for knobs Stk. #32844 and #32842 |
| 32846 | Shaft - Pointer carriage guide shaft |
| 14270 | Spring - Retaining spring for knobs |

Stock No. 32838, 32953, 32951, 12013, 14343, 32938, 32950, 32930, 32910, 32911 and 32928 not used with Model 5Q12.

## MODEL 5Q12A (RC996E)

Replacement parts as for 6Q8 with the following exceptions.

| STOCK No. | RECEIVER ASSEMBLIES Add Stock No. |
|---|---|
| 32832 | Bracket - Drive bracket, pulleys and tuning knob shaft |
| 12829 | Capacitor - 56 mmfd. |
| 30904 | Capacitor - 100 mmfd. |
| 34146 | Control - Tone Control |
| 32818 | Control - Volume Control and power switch |
| 32835 | Cord - Indicator drive cord |
| 30546 | Resistor - 470 ohms, 1/4 watt (R10) |
| 32833 | Shaft - Tuning knob shaft eyelet and retainer |
| 32820 | Switch - Range switch |

SPEAKER ASSEMBLIES (RL-78-2)

| | |
|---|---|
| 32907 | Cap—Cone center dust cap..... |
| 32903 | Coil—Speaker field coil (L12)..... |
| 32906 | Coil—Speaker hum neutralizing coil (L13)... |
| 32904 | Cone—Speaker cone, voice coil, center suspension, and dust cap (L14)..... |
| 5118 | Plug—3-contact male for speaker..... |
| 32902 | Speaker—Complete ..... |
| 32905 | Transformer—Output transformer (T2)..... |

| | MISCELLANEOUS ASSEMBLIES |
|---|---|
| 32838 | Dial - Glass dial scale |
| 34221 | Frame - Dial frame complete with plate and brackets less dial, pointer and guides |
| 32843 | Knob - Black range switch knob |
| 33085 | Knob - Black tuning or tone control knob |
| 32841 | Knob - Black volume control knob |
| 32839 | Knob - Brown tuning or tone control knob |
| 33087 | Knob - Ivory range switch knob |
| 33091 | Knob - Ivory tuning or tone control knob |
| 33086 | Knob - Ivory volume control knob |
| 33563 | Knob - Maroon range switch knob |
| 33093 | Knob - Maroon tuning or tone control |
| 33562 | Knob - Maroon volume control knob |
| 32847 | Pointer - Station selector pointer and carriage |
| 32846 | Shaft - Pointer carriage guide shaft |
| 14270 | Spring - Retaining spring for knobs |

Stock No. 30949, 32838, 32953, 32951, 30881, 12013, 14343, 32932, 32950, 32930, 32911 and 32928 not used with 5Q12A.

# MODEL 5Q66

## Chassis No. RC-477C

## Five-Tube, Three-Band, AC-DC, Superheterodyne Receiver

REFER TO MODEL 5Q6 FOR VIEW OF CABINET AND ALIGNMENT PROCEDURE.

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band). 540-1,720 kc (555-174 m)
Medium Wave ("B" Band)..... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)..... 7.0-22 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

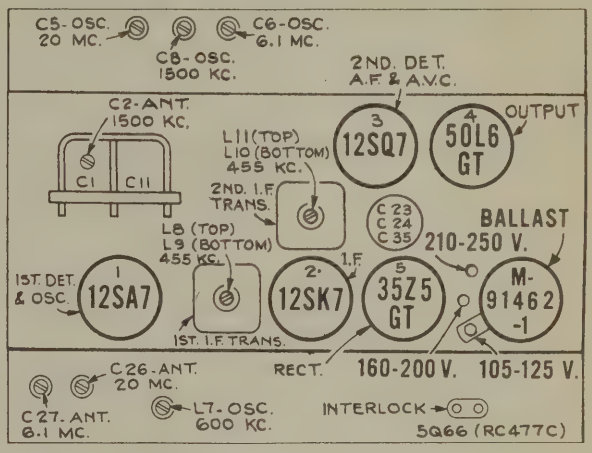
(1) RCA-12SA7..... Detector-Oscillator
(2) RCA-12SK7..... I-F Amplifier
(3) RCA-12SQ7.. 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-50L6GT..... Power Output
(5) RCA-35Z5GT..... Rectifier
Ballast Tube..... RCA Stock No. 35748

PILOT LAMP.....Mazda No. 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING
(210-250 Volt Operation)
Undistorted..... 3.0 watts
Maximum..... 4.5 watts

LOUDSPEAKER (84905-501)
Type..... 5-inch
V. C. Impedance..... 4 ohms at 400 cycles

POWER SUPPLY RATINGS
105-125 volts..... 30 watts
160-180 volts..... 45 watts
210-250 volts..... 60 watts




*Above—Top View*

## Replacement Parts

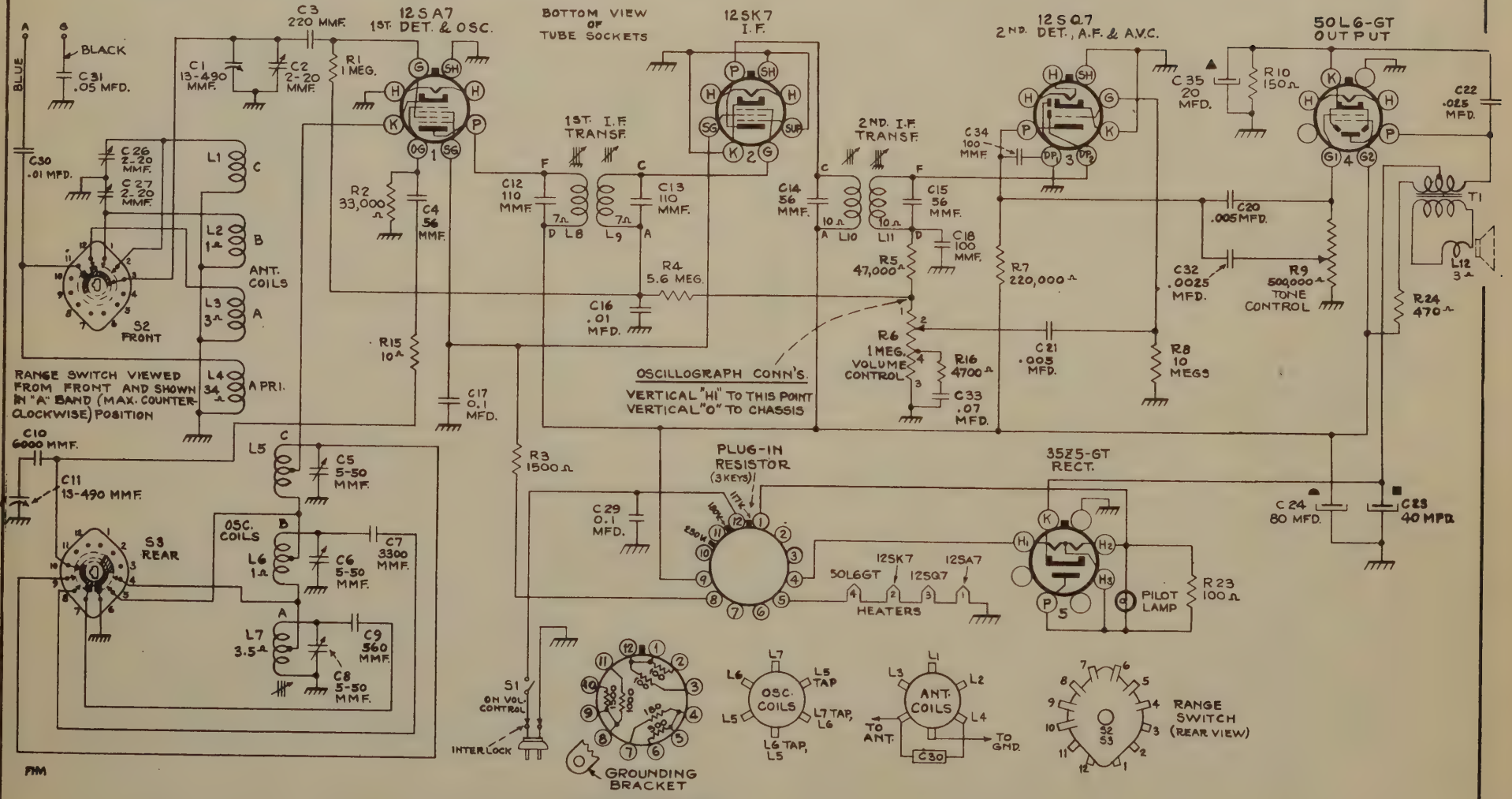
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-477C)** |
| 35748 | Ballast—Ballast tube resistor |
| 32832 | Bracket—Drive bracket, pulleys, and tuning knob shaft |
| 32830 | Capacitor—Trimmer comprising 2 sections of 2-20 mmfd. each |
| 32829 | Capacitor—Trimmer comprising 3 sections of 5-60 mmfd. each |
| 30949 | Capacitor—56 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 34699 | Capacitor—100 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 31403 | Capacitor—3,300 mmfd. |
| 31405 | Capacitor—6,000 mmfd. |
| 5107 | Capacitor—.0025 mfd. |
| 4838 | Capacitor—.005 mfd. |
| 4858 | Capacitor—.01 mfd. |
| 14393 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4886 | Capacitor—.05 mfd. |
| 14626 | Capacitor—.07 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 35747 | Capacitor—Electrolytic comprising 1 section of 80 mfd., 1 of 40 mfd. and 1 of 20 mfd. |
| 32821 | Coil—Antenna coil |
| 32824 | Coil—Oscillator coil |
| 32817 | Condenser—Variable tuning condenser |
| 34146 | Control—Tone control |
| 34851 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 32713 | Core—Adjusting core and stud for oscillator coil |
| 32835 | Drum—Tuning condenser drive drum |
| 31480 | Lamp—Dial lamp |
| 5119 | Plug—3-contact female plug for speaker cable |
| 32834 | Pulley—Pointer cord pulley and bracket |
| 35748 | Resistor—Ballast tube resistor |
| 13988 | Resistor—10 ohms, ½ watt |
| 35711 | Resistor—100 ohms, 4 watts |
| 30880 | Resistor—150 ohms ½ watt |
| 30548 | Resistor—470 ohms, ½ watt |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 30146 | Resistor—4,700 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 32848 | Screw—8-32 square-head screw for drum, Stock No. 32835 |
| 35634 | Socket—Ballast tube resistor socket (Remove terminals not required) |
| 31365 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 32819 | Switch—Range switch |
| 35636 | Transformer—First I-F transformer |
| 35628 | Transformer—Second I-F transformer |
| 35748 | Tube—Ballast tube resistor |
| | **SPEAKER ASSEMBLIES (84905-501)** |
| 35835 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 35834 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35749 | Back—Cabinet back—less power cord |
| 32836 | Cord—Power cord complete with plugs |
| 32837 | Dial—Glass dial scale |
| 34221 | Frame—Dial frame complete—less pointer and carriage, pointer guide rods, and dial scale |
| 32847 | Indicator—Station selector indicator and carriage |
| 32844 | Knob—Black range switch knob for Model 5Q66—Brown |
| 33085 | Knob—Black tuning or tone control knob for Model 5Q66—Black |
| 32842 | Knob—Black volume control knob for Model 5Q66—Brown |
| 32840 | Knob—Brown tuning or tone control knob for Model 5Q66—Brown |
| 33090 | Knob—Ivory range switch knob for Model 5Q66—Black |
| 33089 | Knob—Ivory volume control knob for Model 5Q66—Black |
| 4393 | Screw—No. 8-32 headless set screw for knobs, Stock Nos. 32844, 32842, 33089, and 33090 |
| 34491 | Shaft—Pointer carriage guide shaft |
| 14270 | Spring—Retaining spring for knobs, Stock Nos. 32840 and 33085 |

| TUBES | 117 V. SUPPLY | | | | 180 V. SUPPLY | | | | 230 V. SUPPLY | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VOLTAGE | | | CURRENT | VOLTAGE | | | CURRENT | VOLTAGE | | | CURRENT |
| | P | SG | K | K | P | SG | K | K | P | SG | K | K |
| (1) 12SA7 | 106 | 89 | — | 8.3 | 137 | 98 | — | 12.8 | 146 | 87 | — | 12.8 |
| (2) 12SK7 | 106 | 89 | — | 16.0 | 137 | 98 | — | 17.9 | 146 | 87 | — | 17.9 |
| (3) 12SQ7 | 58* | — | — | .2 | 70* | — | — | .3 | 74* | — | — | .3 |
| (4) 50L6-GT | 114 | 106 | 6.5 | 45.8 | 142 | 137 | 8.3 | 50.0 | 157 | 146 | 8.9 | 52.0 |
| (5) 35Z5-GT | — | — | 119 | 70.3 | — | — | 150 | 80.0 | — | — | 160 | 83.0 |

VOLTAGES SHOULD HOLD WITHIN ±20%.

* CANNOT BE MEASURED WITH AN ORDINARY VOLTMETER.




*Ballast M-91462-1 in 5Q66.*

# Model 5X5 Series
## (Chassis No. RC-406)
## Five-Tube, Single-Band, AC-DC Multiplex Superheterodyne Receiver
## Model PLF-10
## Power Line Filter Coupling Unit

## Electrical and Mechanical Specifications

FREQUENCY RANGE
Receiver ..... 540-1,720 kc
Remote Control Oscillator ..... 540-800 kc

TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12C8 ..... I-F Amp., 2nd-Det., and A.V.C.
(3) RCA-12SC7 ..... 1st A-F and Remote Control Osc.
(4) RCA-35L6GT ..... Power Output
(5) RCA-35Z5GT ..... Half-Wave Rectifier

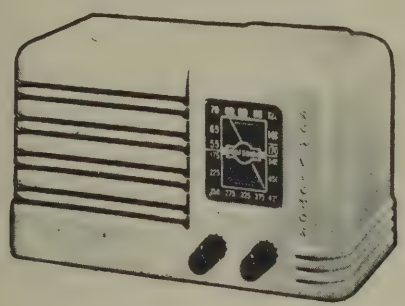
Intermediate Frequency ..... 455 kc

POWER SUPPLY RATINGS
A-C Rating ..... 100-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 100-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER
Type ..... 4 inch Electrodynamic
Cabinet Dimensions (inches) Height 5⅛, Width 8⅝, Depth 4½
Weight (net) ..... 5¼ pounds

## General Description



*Model 5X5I*
*RC-406A*
*Ivory Finish*

*Model 5X5W*
*RC-406*
*Walnut Finish*

The following features are incorporated in the design of the Little Nipper Multiplex 5X5 Series Receiver:

First, it is a "standard broadcast" receiver. Second, it will operate any other radio in the home by "remote control" without the use of connecting wires. Third, records may be reproduced through the Little Nipper when used with Victrola Attachment. Fourth, the Model 5X5 (when used with Victrola Attachment) will reproduce records through any other radio in the home without the use of connecting wires.

When using the 5X5 as a remote control, the Model PLF-10 Power Line Filter Coupling Unit should be used in conjunction with the receiver to be controlled. The filter is connected between the power line receptacle and the receiver being controlled, as shown in accompanying drawing.

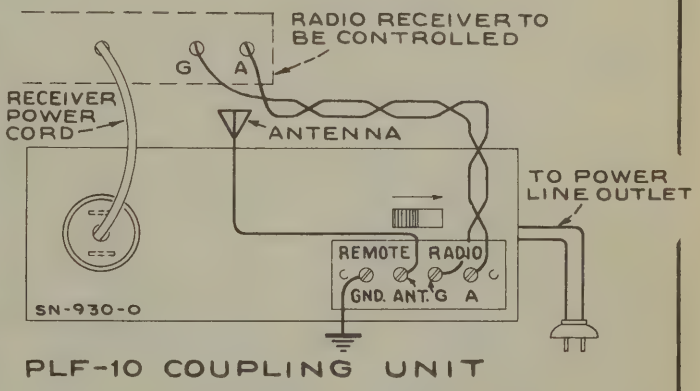
## Set-up Procedure for Remote Control

1. Install the 5X5 and tune in any desired station.
2. Turn the control switch on the back of the 5X5 to its clockwise position marked "Remote." The 5X5 becomes silent.

   The 5X5 now becomes a small relay station for signalling to the controlled receiver via the power line wiring.
3. Next tune the main receiver to the exact frequency of transmission of the 5X5, usually 540 kc. Tune carefully to this frequency, setting the volume control as high as permissible with regard to hum and noise conditions. The station to which the 5X5 was tuned will be heard. If the receiver is equipped with tuning indicator (Magic Eye) the correct point will most easily be obtained by observing the indicator.
4. Now any station tuned in on the 5X5 dial will be heard on the controlled receiver. The volume will also be controlled with the 5X5 volume control.
5. If it is desired to operate the controlled receiver on its own controls it is only necessary to set the switch on the Power Line Filter Coupling Unit to its position marked "Radio."
6. In the event that, with the 5X5 being used as a remote control, other receivers in the home are in use, trouble may be experienced due to noise and hum. To avoid this, connect a Power Line Filter Coupling Unit, RCA Victor PLF-10, to each of these other receivers, as shown in accompanying drawing.

### Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12C8 close to chassis.
2. Dress A.V.C. condenser (0.1) close to chassis and tight to 0.25 mfd. condenser.




PLF-10 COUPLING UNIT

**Antenna.**—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Victrola Attachment.**—A jack is provided on the rear of chassis for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

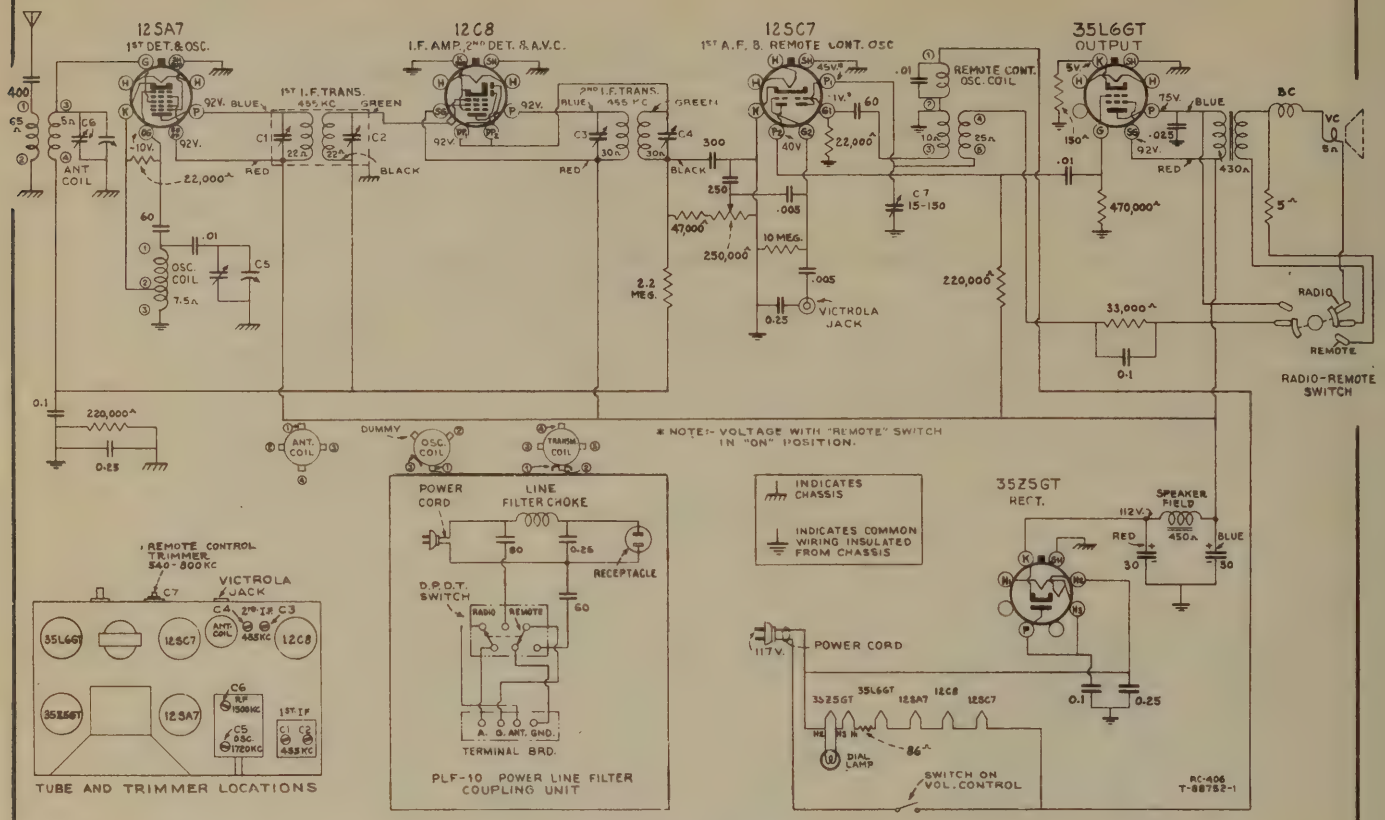
**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**The Remote Control Oscillator** in the 5X5 is set at the factory to approximately 540 kc. The frequency may be varied between 540 and 800 kc to suit local conditions by adjusting the trimmer condenser C7.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

If the electric supply circuit is a three-wire system, it may be necessary to connect a ½ mfd 700-volt capacitor between the two outside lines of the three-wire system.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | Tuning condenser stator (osc.) in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna term. of ant. trans. in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C6 (antenna) |




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | STOCK No. | DESCRIPTION |
|---|---|---|---|
| | **CHASSIS ASSEMBLIES** | 32969 | Socket—Dial lamp socket |
| 13057 | Capacitor—60 mmfd. | 14278 | Socket—Phonograph socket |
| 12488 | Capacitor—250 mmfd. | 32537 | Socket—Tube socket |
| 12952 | Capacitor—300 mmfd. | 30585 | Spring—Drive cord spring |
| 30433 | Capacitor—400 mmfd. | 33319 | Transformer—First i-f transformer |
| 4838 | Capacitor—.005 mfd. | 32578 | Volume control and power switch |
| 4937 | Capacitor—.01 mfd. | | **POWER LINE FILTER PLF-10** |
| 4870 | Capacitor—.025 mfd. | 13057 | Capacitor—60 mmfd. |
| 4839 | Capacitor—0.1 mfd. | 12484 | Capacitor—0.25 mfd. |
| 12484 | Capacitor—0.25 mfd. | 33492 | Coil—Choke coil |
| 33321 | Capacitor—Electrolytic, 2 sections 30 mfd. each | 33493 | Receptacle—Power receptacle |
| 32572 | Coil—Antenna coil | 33491 | Switch |
| 33320 | Coil—Duplex oscillator coil | | **SPEAKER ASSEMBLIES (39105—2)** |
| 32962 | Coil—Oscillator coil | 32964 | Transformer—Output transformer |
| 33323 | Condenser—Trimmer 20-150 mmfd. | | **MISCELLANEOUS ASSEMBLIES** |
| 32968 | Condenser—2-gang variable tuning | X-639 | Cabinet—Ivory finish—Model 5X5I.....(net) |
| 32634 | Cord—Drive cord | X-638 | Cabinet—Walnut finish—Model 5X5W...(net) |
| 32946 | Drum—Condenser drive drum | 32942 | Dial—Glass dial scale |
| 12409 | Lead—Antenna lead | 33317 | Fastener—Push fastener to hold cabinet back |
| 33322 | Resistor—5 ohms, 5 watts | 33306 | Knob—Black tuning knob—Model 5X5I |
| 14671 | Resistor—33 ohms, ½ watt | 32447 | Knob—Ivory knob—Model 5X5W |
| 13428 | Resistor—150 ohms, ½ watt | 32943 | Nut—Speed nut to hold dial |
| 13998 | Resistor—22,000 ohms, ½ watt | 31646 | Spring—Knob retaining spring |
| 12454 | Resistor—33,000 ohms, ½ watt | | |
| 12412 | Resistor—47,000 ohms, ½ watt | | |
| 12264 | Resistor—220,000 ohms, ½ watt | | |
| 12285 | Resistor—470,000 ohms, ½ watt | | |
| 12679 | Resistor—2.2 meg., ½ watt | | |
| 13601 | Resistor—10 meg., ½ watt | | |
| 32945 | Shaft—Tuning knob shaft and bushing | | |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 32946 | Drum—Condenser drive drum and indicator |
| 11765 | Lamp—Dial lamp, Mazda No. 51 |
| 33324 | Switch—"Remote" switch |
| 32967 | Transformer—Second I-F trans. |
| 34569 | Speaker—Complete—less transformer |

# RADIOLA P-5 AND MODEL 25 BP

2ND PROD. RC-465A RC-1020B

2ND PROD. RC-527D RC-1020

## THREE-WAY PORTABLES

MODEL P 5

MODEL 25 BP

## Specifications

Frequency Range ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc
110 to 125 volts, AC 50 or 60 cycles, or DC..... 85 watts

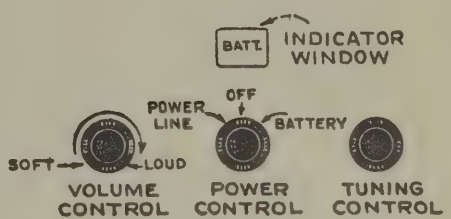
BATTERIES REQUIRED
"A" one 1.5 volt dry plug-in type "A," (Eveready No. 743 or equivalent)
"B" two 45 volt dry plug-in type "B," (Eveready No. 482 or equivalent)

CURRENT CONSUMPTION
Battery Operation ..... "A" 0.25 amperes, "B" 11.5 milliamperes
Total Rect. "B" (117 volt, 60 cycle)..... 56 mils.

POWER OUTPUT
Undistorted..... .15 watt Maximum..... .25 watt

LOUDSPEAKER..... 5-inch permanent-magnet dynamic

CABINET DIMENSIONS
Height.....9 inches, Width.....12 inches, Depth.....6¼ inches



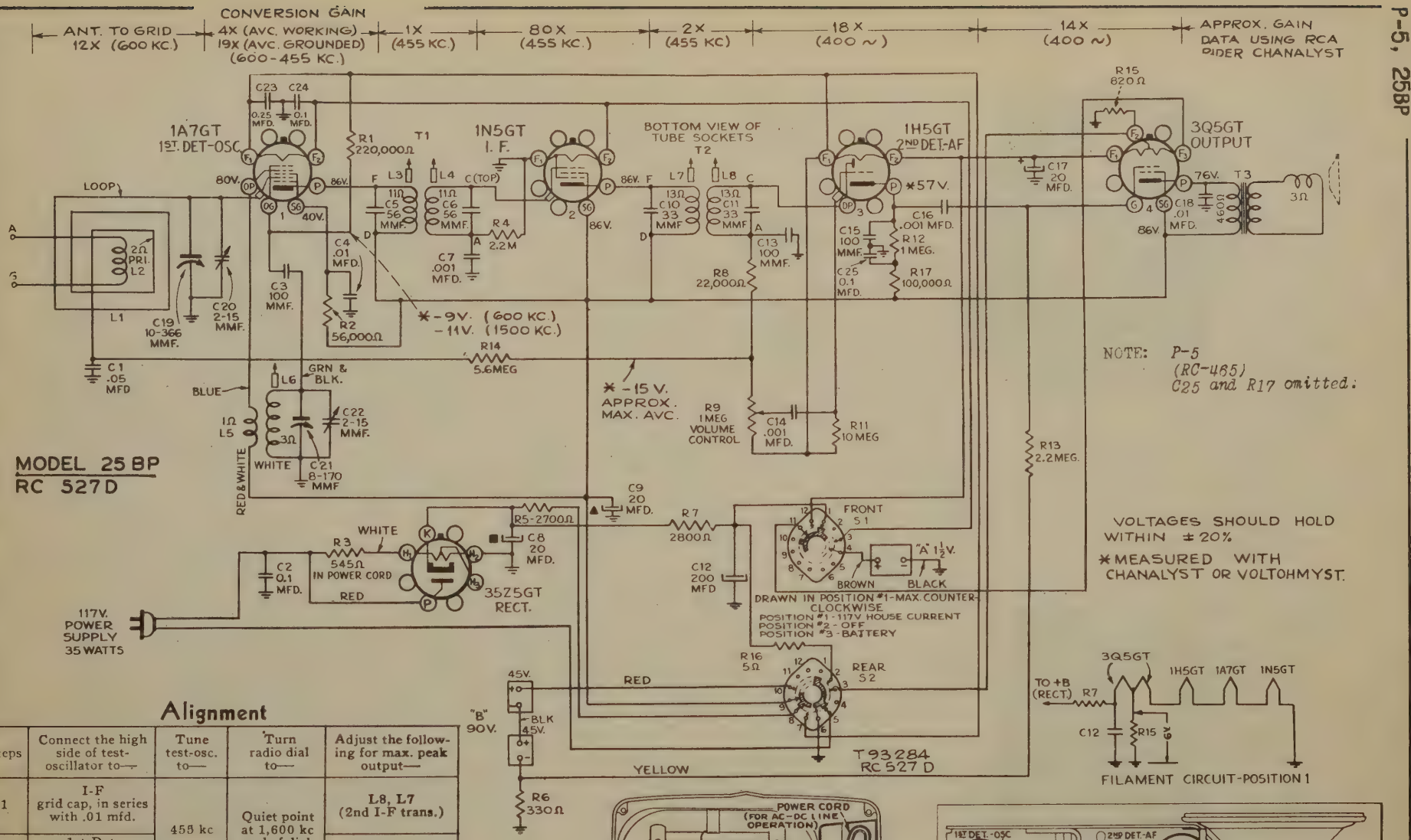

Precautionary Lead Dress.—

1. Lead from I-F tube grid and from the loop to variable capacitor should not be disturbed after receiver has been aligned.
2. Grid lead to the 1N5-GT tube should be kept away from leads to filament resistors.

## Replacement Parts P5 1ST. PROD.

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

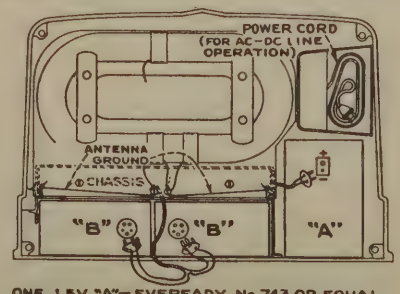
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-465)** |
| 36176 | Capacitor—33 mmfd., silver mica |
| 36175 | Capacitor—56 mmfd., silver mica |
| 12720 | Capacitor—100 mmfd. |
| 13894 | Capacitor—390 mmfd. |
| 36163 | Capacitor—.001 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 34965 | Capacitor—Electrolytic, 20 mfd., 25 volts |
| 34472 | Capacitor—Electrolytic, comprising two sections of 20 mfd., 150 volts, and one section of 200 mfd., 25 volts |
| 36134 | Case—Power cord case |
| 36123 | Coil—Oscillator coil |
| 36120 | Condenser—Variable tuning condenser |
| 36125 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 13-in. overall) |
| 37066 | Dial—Dial scale only, less mounting plate |
| 36786 | Indicator—Station selector indicator |
| 37385 | Indicator—Switch indicator plate |
| 36132 | Loop—Antenna loop |
| 36127 | Plate—Dial plate—less dial |
| 32208 | Plug—2-prong male plug for "A" battery cable |
| 32641 | Plug—3-prong male plug for "B" battery cable |
| 36129 | Resistor—Voltage divider—2,800 ohms, 7 watts |
| 36842 | Resistor—5 ohms, 1 watt (flexible type) |
| 30538 | Resistor—330 ohms, ½ watt |
| 14076 | Resistor—820 ohms, ½ watt |
| 30730 | Resistor—2,700 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 36130 | Shaft—Tuning shaft |
| 32299 | Socket—Tube socket |
| 36131 | Spring—Drive cord spring |
| 37384 | Switch—Power switch |
| 36121 | Transformer—First I-F transformer |
| 36122 | Transformer—Second I-F transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-85A1)** |
| 32907 | Cap—Dust cap |
| 36465 | Cone—Cone complete with voice coil |
| 36098 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36150 | Back—Back cover |
| 35067 | Crystal—Dial scale crystal |
| 36153 | Fastener—One set of 4 push-on fasteners for back cover |
| 35678 | Fastener—Push-on fastener for crystal |
| 36222 | Fastener—Snap fastener for power cord door |
| 37368 | Handle—Leather carrying handle with loop |
| 34015 | Knob—Volume control, power switch, or tuning knob |
| 36154 | Spacers—One set of rubber spacers for control shaft |



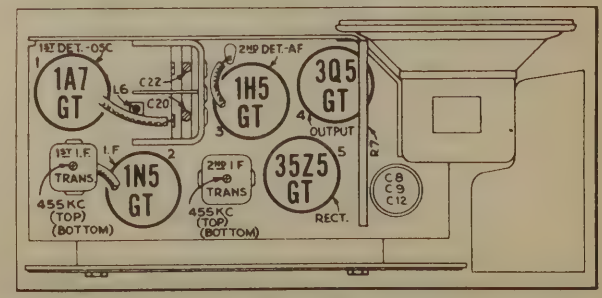

MODEL 25 BP
RC 527 D

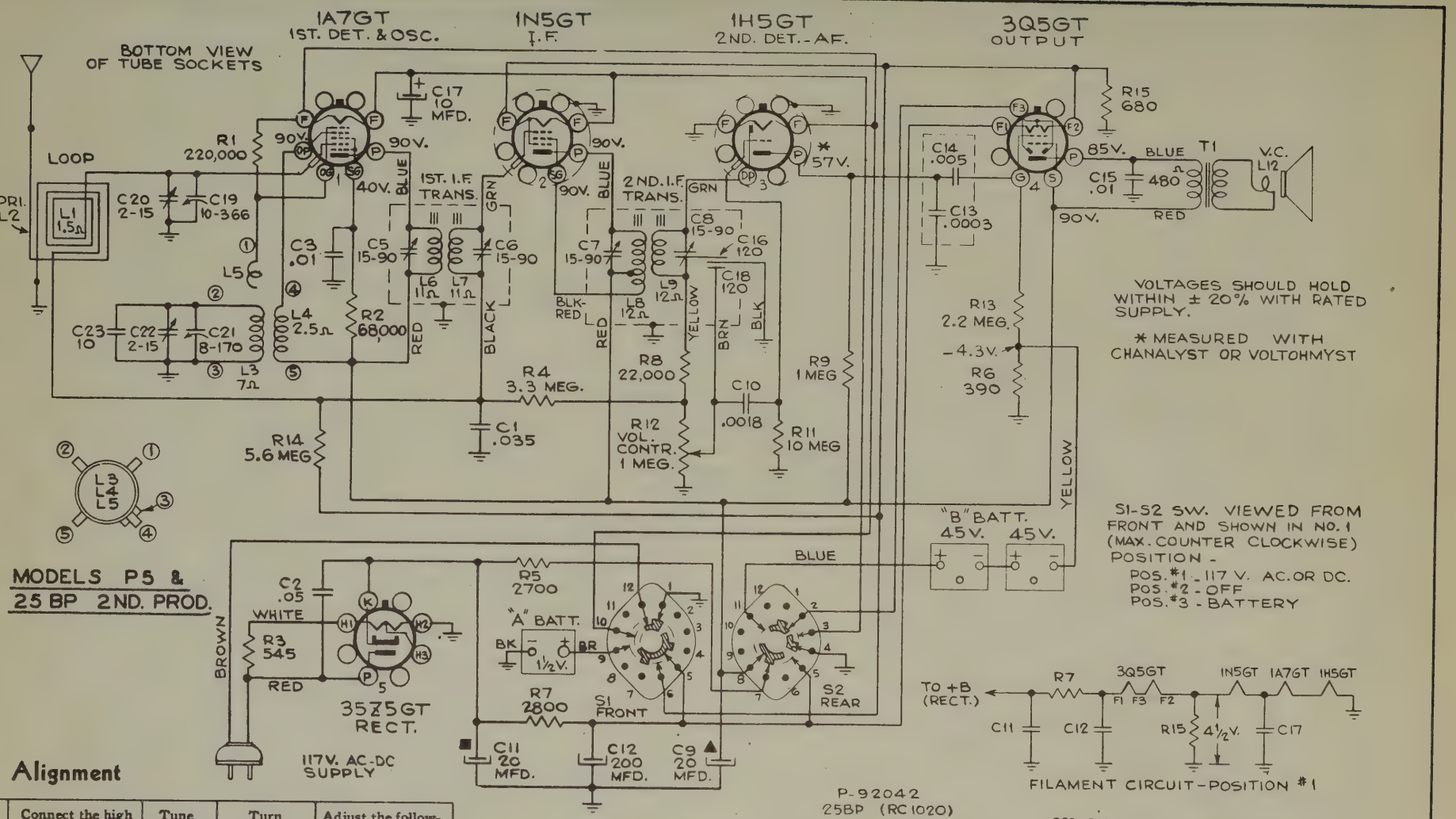
## Alignment

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | L8, L7 (2nd I-F trans.) |
| 2 | 1st-Det. grid cap, in series with .01 mfd. | | | L4, L3 (1st I-F trans.) |
| 3 | radiated signal 1,720 kc | | Gang at min. capacity | C22 (Osc. Trimmer) |
| 4 | radiated signal 1,400 kc | | signal frequency | C20 (Ant. Trimmer) |
| 5 | radiated signal near 600 kc | | | L6 (Rock in) |
| 6 | Repeat steps 3, 4 and 5 until aligned. | | | |



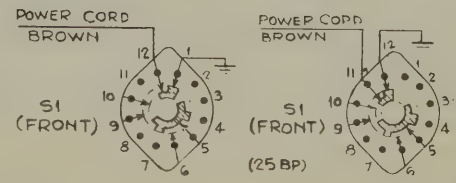

ONE 1.5V. "A"— EVEREADY No.743 OR EQUAL.
TWO 45V. "B"— EVEREADY No.482 OR EQUAL.



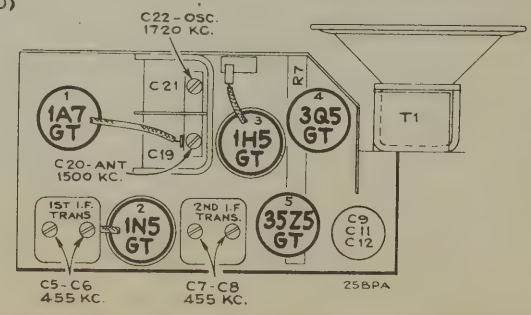



## Alignment

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C8, C7 (2nd I-F trans.) |
| 2 | 1st-Det. grid cap, in series with .01 mfd. | | | C5, C6 (1st I-F trans.) |
| 3 | radiated signal 1,720 kc | | Gang at min. capacity | C22 (Osc. Trimmer) |
| 4 | radiated signal 1,400 kc | | signal frequency | C20 (Ant. Trimmer) |




*Two Types Power Switch, Model 25BP—2nd Production*



# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL P5** |
| | **CHANGES IN 1ST PRODUCTION** |
| | (RC-465-A) |
| | SPEAKER ASSEMBLIES (RL-81B-1) |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| 36098 | Transformer—Output transformer |
| | MISCELLANEOUS ASSEMBLIES |
| 35079 | Crystal—Dial scale crystal—less dial |
| 38443 | Grille—Metal grille |
| 34015 | Knob—Control knob |
| | **MODEL 25BP** |
| | CHASSIS ASSEMBLIES (R.C. 527D) |
| 34965 | Capacitor—Electrolytic—20 mfd., 25 volts |
| 34472 | Capacitor—Electrolytic comprising 2 sections of 20 mfd., 150 volts, and 1 section of 200 mfd., 25 volts |
| 36176 | Capacitor—33 mmfd. |
| 36175 | Capacitor—56 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 37102 | Capacitor—.001 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd., 300 volts |
| 4839 | Capacitor—0.1 mfd., 400 volts |
| 12484 | Capacitor—0.25 mfd. |
| 36497 | Coil—Oscillator coil |
| 36120 | Condenser—Variable tuning condenser |
| 36125 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 13-in. overall length) |
| 36606 | Core—Adjustable core and stud for oscillator coil |
| 38442 | Dial—Dial scale |
| 36133 | Indicator—Station selector indicator |
| 36132 | Loop—Antenna loop |
| 36127 | Plate—Dial plate—less dial |
| 37385 | Plate—Power switch indicator plate |
| 32208 | Plug—2-prong male plug for "A" battery cable |
| 32641 | Plug—3-prong male plug for "B" battery cable. |
| 36129 | Resistor—Voltage divider—2800 ohms, 7 watt |
| 36842 | Resistor—5 ohms, 1 watt |
| 30538 | Resistor—330 ohms, ½ watt |
| 14076 | Resistor—820 ohms, ½ watt |
| 30730 | Resistor—2700 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 36130 | Shaft—Tuning knob shaft (flat—7/16-in.) |
| 38696 | Shaft—Tuning knob shaft (flat—5/8-in.) |
| 32299 | Socket—Tube socket |
| 36131 | Spring—Drive cord spring |
| 37384 | Switch—Power switch |
| 36121 | Transformer—First I.F. transformer |
| 36122 | Transformer—Second I.F. transformer |
| 33726 | Washer—Spring washer for tuning shaft |
| | SPEAKER ASSEMBLIES (RL-81B-1) |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| 36098 | Transformer—Output transformer |
| | MISCELLANEOUS ASSEMBLIES |
| 35079 | Crystal—Dial crystal |
| 38443 | Grille—Perforated grille |
| 35121 | Knob—Control knobs |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL 25BP 2ND. PROD.** |
| | CHASSIS ASSEMBLIES (RC-1020) |
| 36083 | Can—Shield can for first I.F. transformer |
| 35097 | Can—Shield can for second I.F. transformer |
| 30314 | Cap—Grid cap |
| 36718 | Capacitor—Electrolytic—10 mfd., 10 volts |
| 34472 | Capacitor—Electrolytic comprising 2 sections of 20 mfd., 150 volts, and 1 section of 200 mfd., 25 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of .0003 mfd. |
| 34506 | Capacitor—.0018 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 5198 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 39694 | Coil—Oscillator coil |
| 36120 | Condenser—Variable tuning condenser |
| 36125 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 13-in. overall length) |
| 37681 | Cord—Resistance power cord—545 ohms |
| 38442 | Dial—Dial scale |
| 36133 | Indicator—Station selector indicator |
| 36132 | Loop—Antenna loop complete |
| 36127 | Plate—Dial plate—less dial |
| 37385 | Plate—Power switch indicator plate |
| 32208 | Plug—2 prong male plug for "A" battery cable. |
| 32641 | Plug—3 prong male plug for "B" battery cable. |
| 36129 | Resistor—Voltage divider—2800 ohms, 7 watt |
| 30498 | Resistor—390 ohms, ½ watt |
| 12262 | Resistor—680 ohms, ½ watt |
| 30730 | Resistor—2,700 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14138 | Resistor—68,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30652 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 38696 | Shaft—Tuning knob shaft |
| 32299 | Socket—Tube socket |
| 36131 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformers in can. |
| 39565 | Switch—Power switch |
| 36082 | Transformer—First I.F. transformer—less shield can |
| 38343 | Transformer — Second I.F. transformer — less shield can |
| 33726 | Washer—"C" washer for tuning shaft |
| | SPEAKER ASSEMBLIES |
| | (92161-503) |
| 38352 | Cone—Cone complete with voice coil |
| | (92161-504) |
| 39535 | Cone—Cone complete with voice coil |
| | (92161-505) |
| 38352 | Cone—Cone complete with voice coil |
| | (92322-502) |
| 39536 | Cone—Cone complete with voice coil |
| | (92374-501) |
| 39537 | Cone—Cone complete with voice coil |
| | MISCELLANEOUS ASSEMBLIES |
| 35079 | Crystal—Dial scale crystal |
| 38443 | Grille—Perforated metal grille |
| 35121 | Knob—Control knob |

## Speakers RL-81-B1, RL-81-B2, 92161-1:

The above speakers were used on the 25BP in addition to those listed in the Service Note. Use Output Transformer Stock No. 39538 with all speakers used in the 25BP, except: when using a speaker stamped RL-81-B1 use Output Transformer Stock No. 36098.

The replacement parts are listed below:

| Stock No. | Description |
|---|---|
| | (RL-81-B1, RL-81-B2) |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| | (92161-1) |
| 38352 | Cone—Cone complete with voice coil |

NOTE: If number stamped on your speaker frame does not appear on above list, order part required by description giving number stamped on your speaker and receiver model.

## 25BP

### Additional Replacement Parts:

| STOCK No. | |
|---|---|
| 39462 | Cabinet back |
| 39463 | Snap fastener |
| 39464 | Leather pull tab |

## P-5 - 2ND PROD. (RC-1020B)

Replacement parts identical to 25BP 2nd Prod. RC 1020 except change stock no.

*Change stock no.*

| From | To | |
|---|---|---|
| 38442 | 37066 | Dial |
| 36133 | 36786 | Indicator |
| 35121 | 34015 | Knob |

# MODEL QB5 RC-563A and CV-112X

## Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)..... 540-1,720 kc (555-174 m)
Medium Wave ("B" Band)..... 2.3-7.1 mc (130-42.2 m)
Short Wave ("C" Band)..... 7.1-22 mc (42.2-13.6 m)

INTERMEDIATE FREQUENCY..... 455 kc

BATTERIES REQUIRED

1—1.5 Volt "A" Battery; 2—45 Volt "B" Batteries
Or : One 1½-90 Volt battery pack.

BATTERY DRAIN

"A"..... .25 amp.
"B"..... 12.50 ma.

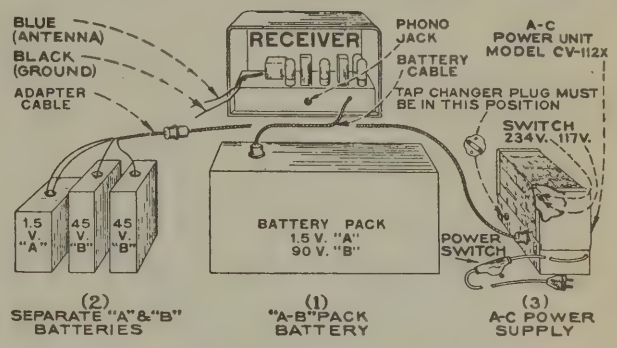
POWER OUTPUT

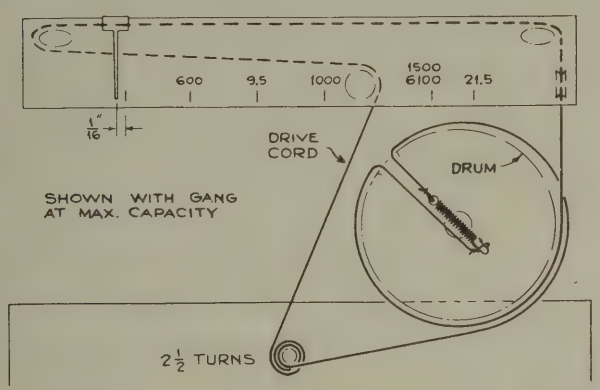
Undistorted..... .20 watt
Maximum..... .56 watt

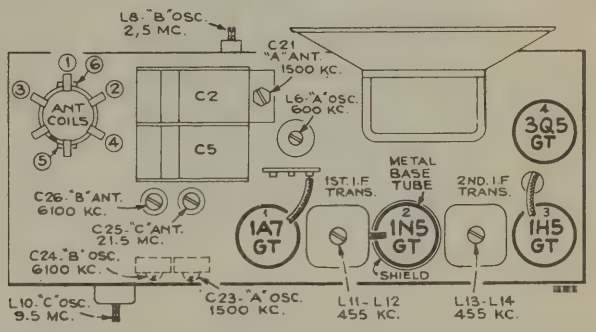
LOUDSPEAKER (RL-81B-2)

Type..... 5-inch permanent-magnet dynamic
Voice-coil impedance.....4 ohms at 400 cycles

**MODEL QB5**—Identical with the Model Q12, except for 1½-volt battery operation. Convertible to AC operation through RCA Victor Power Supply Unit CV112-X.



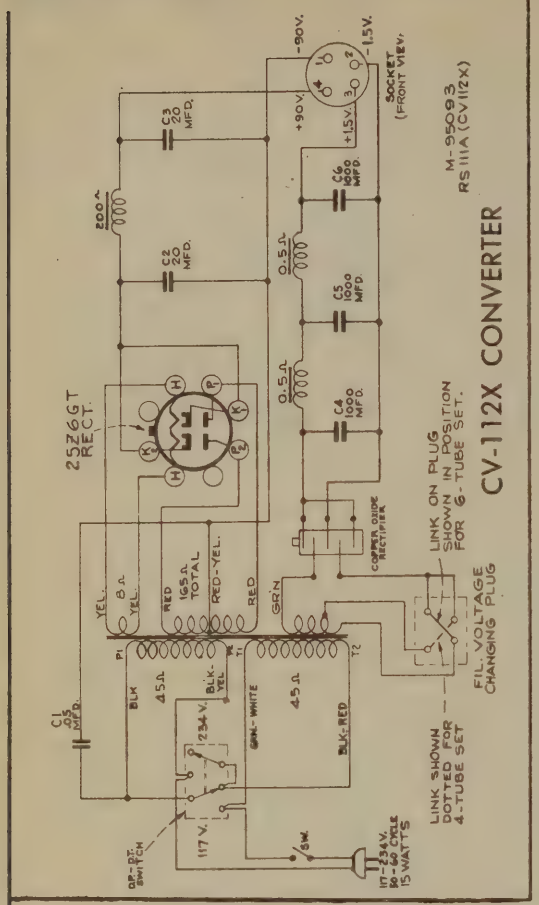




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 32548 | Capacitor—Electrolytic, comprising 1 section of 12 mfd., 150 volts, and 1 section of 20 mfd., 150 volts |
| 32830 | Capacitor—Mica trimmer, 2 sections of 2-20 mmfd. each |
| 31292 | Capacitor—Mica trimmer comprising 2 sections of 3-30 mmfd. |
| 36176 | Capacitor—33 mmfd. |
| 30904 | Capacitor—100 mmfd., mica |
| 12720 | Capacitor—100 mmfd., moulded |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 12951 | Capacitor—2,200 mmfd. |
| 30304 | Capacitor—4,700 mmfd. |
| 37102 | Capacitor—.001 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 4838 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 32821 | Coil—Antenna coil |
| 32148 | Coil—Oscillator coil—"A" band |
| 33784 | Coil—Oscillator coil—"B" band |
| 38295 | Coil—Oscillator coil—"C" band |
| 38287 | Condenser—Variable tuning condenser |
| 38406 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 50-in. overall length) |
| 38296 | Core—Adjustable core and stud for "C" band oscillator coil |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 37068 | Indicator—Station selector indicator |
| 38288 | Plate—Dial back plate complete with pulleys and bracket—less dial |
| 30568 | Plug—4-prong male plug for battery cable |
| 36230 | Pulley—Drive cord pulley |
| 36237 | Pulley—Tuning condenser pulley |
| 30498 | Resistor—390 ohms, ½ watt |
| 30146 | Resistor—4,700 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14138 | Resistor—68,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 14752 | Resistor—2.7 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 36897 | Shaft—Tuning knob shaft |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 31261 | Spring—Retaining spring for "C" band oscillator coil core and stud |
| 38297 | Switch—Range switch |
| 38300 | Transformer—Audio transformer |
| 35636 | Transformer—First I.F. transformer |
| 36122 | Transformer—Second I.F. transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL81B2)** |
| 35570 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36890 | Clamp—Dial clamp—L.H. |
| 36891 | Clamp—Dial clamp—R.H. |
| 36103 | Decalcomania—"OFF-Volume" decal |
| 35480 | Decalcomania—Range switch decal |
| 38328 | Dial—Glass dial scale |
| 36886 | Knob—Range switch or volume control knob |
| 36722 | Knob—Tuning knob |
| 30900 | Spring—Retaining spring for knobs |
| | **CV-112X AC POWER UNIT** |
| 4886 | Capacitor—.05 mfd.—400 volts (C1) |
| 30873 | Capacitor—Electrolytic, 2 sections 20 mfd., 150 volts |
| 36553 | Capacitor—Electrolytic, 1,000 mfd., 3 volts |
| 36547 | Coil—High voltage choke coil—200 ohms |
| 36548 | Coil—Low voltage choke coil—marked 1B84 |
| 36549 | Coil—Low voltage choke coil—marked 1B85 |
| 38353 | Plug—2-contact filament voltage changing plug |
| 36551 | Rectifier—1.5 volt rectifier |
| 36552 | Socket—4-contact power output socket |
| 18008 | Socket—Tube socket |
| 36550 | Switch—Power cord switch |
| 33491 | Switch—Voltage change switch |
| 38393 | Transformer—Power transformer—110-220 volts, 50-60 cycle |




**PHONOGRAPH ATTACHMENT**

A jack is provided on the rear of chassis for connecting a phonograph attachment into the audio amplifying circuit. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

## Alignment Procedure

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the receiver chassis and keep the output as low as possible to avoid AVC action.

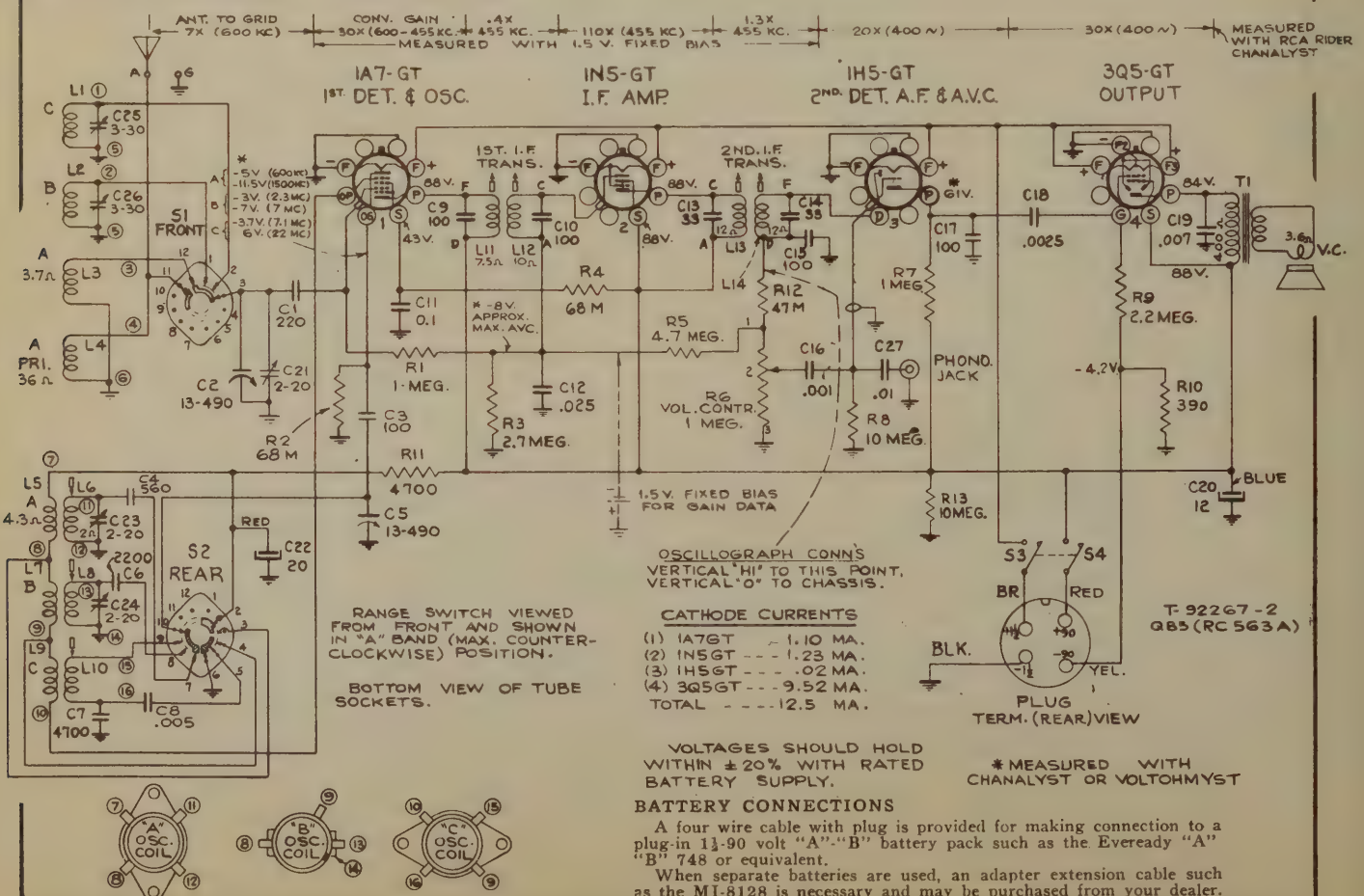
**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment. The dial backing plate has marks corresponding to alignment frequencies as shown in accompanying sketch. Before alignment, set the dial pointer so that, with the gang in full mesh, the pointer is 1/16-in. to the left of the left-hand mark on the dial backing plate.

| Steps | Connect high side of test osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust following for max. peak output— |
|---|---|---|---|---|
| 1 | IF grid cap in series with .01 mfd. | 455 kc | "A" Band Quiet Point at High Freq. End | L14 and L13 (2nd IF Trans.) |
| 2 | 1st det. grid cap in series with .01 mfd. | | | L12 and L11† (1st IF Trans.) |
| 3 | Antenna Lead in series with 200 mmf. | 1,500 kc | 1,500 kc mark | Peak C23 (osc.) and C21 (ant.) |
| 4 | | 600 kc | 600 kc mark | L6 (osc.) |
| 5 | | Repeat steps 3 and 4. | | |
| 6 | Antenna Lead in series with 300 ohms | 6.1 mc | 6.1 mc mark | Peak C24 (osc.)* and C26 (ant.) |
| 7 | | 2.5 mc | 600 kc mark | L8 (osc.)** |
| 8 | | Repeat steps 6 and 7. | | |
| 9 | | 9.5 mc | 9.5 mc mark | L10 (osc.) Rock Gang |
| 10 | | 21.5 mc | 21.5 mc mark | C25 (ant.) Rock Gang |

*Use minimum capacity peak if two peaks can be obtained.

**Rock gang slightly for peak output.

†Do not readjust L14 or L13 when test oscillator is applied to 1A7-GT grid.




**BATTERY CONNECTIONS**

A four wire cable with plug is provided for making connection to a plug-in 1½-90 volt "A"-"B" battery pack such as the Eveready "A" "B" 748 or equivalent.

When separate batteries are used, an adapter extension cable such as the MI-8128 is necessary and may be purchased from your dealer.

# MODEL QU5

**Chassis No. RC-530**

## Eight-Tube, Five-Band, A-C, Superheterodyne Radio-Phonograph

**REFER TO RP-145 SERVICE NOTE FOR DATA ON AUTOMATIC MECHANISM**

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band).. 540-1,720 kc (556-174 m)
Medium Wave ("B" Band)..... 3.0-9.5 mc (100-31.6 m)
"31" Meter Spread Band..... 9.5-11.7 mc (31.6-25.6 m)
"25" Meter Spread Band..... 11.7-15.1 mc (25.6-19.9 m)
"19-13" Meter Spread Band.... 15.1-22.5 mc (19.9-13.3 m)

INTERMEDIATE FREQUENCY ..... 455 kc

POWER SUPPLY RATING

105-125, 200-250 volts, 50-60 cycles, 160 watts

TUBE COMPLEMENT

(1) RCA-6SA7..... 1st Detector-Oscillator
(2) RCA-6SK7..... I-F Amplifier
(3) RCA-6SQ7..... 2d Detector, A-F Amplifier, A.V.C.
(4) RCA-6AD7G..... Phase Inverter, Power Output
(5) RCA-6F6G..... Power Output
(6) RCA-6F6G..... Power Output
(7) RCA-6F6G..... Power Output
(8) RCA-5U4G..... Rectifier

Pilot Lamps { Mazda No. 55, 6.5 volts 0.4 amp.
Mazda No. 51, 7.5 volts 0.2 amp.

POWER OUTPUT RATING

Undistorted..... 20 watts
Maximum..... 24 watts

LOUDSPEAKERS

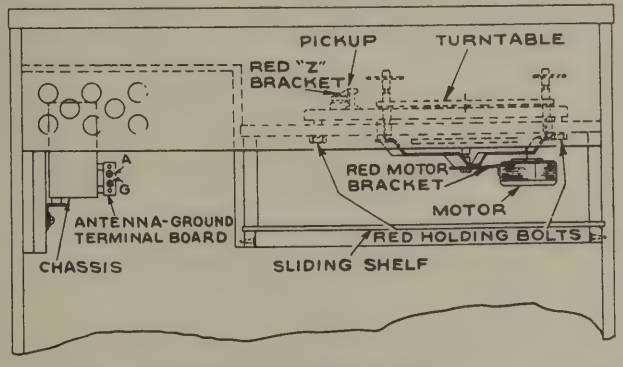
Model RL-70M-4..... Electrodynamic 12 inch
Model RL-71A-4..... Permanent Magnet Dynamic 12 inch
Voice Coil Impedance (both) at 400 c.p.s. 2.2 ohms

Cabinet Dimensions (inches)..... Height 34; Width 34¾; Depth 19
Net Weight (pounds)..... 123
Chassis Base Dimensions (inches)..Height 2¾, Width 15⅛, Depth 5¼
Over-all Chassis Height.....8½ inches
Tuning Drive Ratio..... 25 to 1

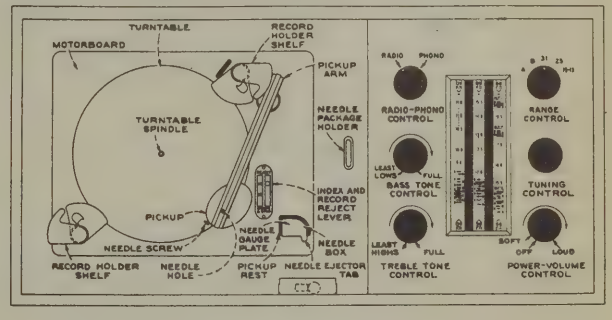
*Model QU5*

PHONOGRAPH

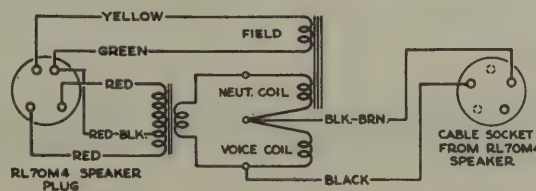
Type (RP145E)..... Automatic
Record Capacity..... Eight 10-inch or seven 12-inch
Turntable Speed..... 78 r.p.m.
Type Pickup..... Crystal
Pickup Impedance..... 100,000 ohms at 1,000 cycles
Motor..... Self-starting, constant-speed, induction type.




*Position of "Holding Bolts"*




*Motorboard and Controls*



*Connections and Colors of Loudspeaker and Cable*

**Synchronizing Speakers.**—In order to get correct tone quality from the dual-speakers used in this model, it is essential that the two speakers be so connected that the diaphragms of both work in unison or synchronism. If the terminals of one speaker are reversed the tone of the set will be flat.

To test for proper connections, turn on receiver with volume down and connect the terminals of a 1½-volt dry cell across the voice coil-terminals of either one of the speakers. If the diaphragms move in or out together at the instant of contact, the speaker connections are O.K. If one moves out and the other moves in, they are bucking, and the voice coil leads of one of the speakers should be reversed.

The movement of the diaphragms may be observed visually or by placing the finger-tips on each cone to feel the movement.

**Precautionary Lead Dress.—**

1. All leads between antenna coils and switch must be as short as possible and kept away from oscillator coil, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.
3. Blue plate lead of 2nd I-F should be dressed under other leads and against chassis.

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.** — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

For additional information, refer to booklet "RCA Victor Receiver Alignment."

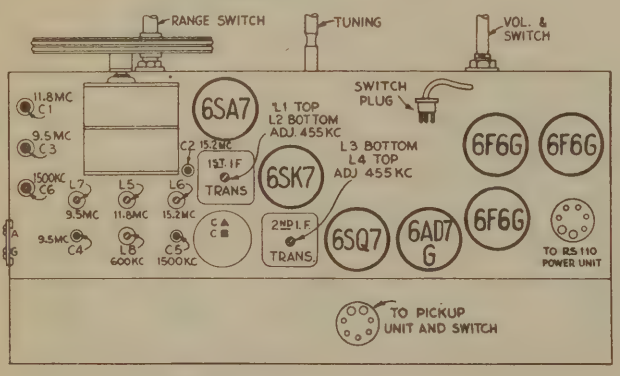
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | A | Quiet Point near 180° | L3 and L4 2nd I-F Trans. |
| 2 | 6SA7 1st Det. grid in series with .01 mfd. | | | | L1 and L2 1st I-F Trans. |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L5 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C2 (osc.)* |
| 5 | | Repeat steps 3 and 4 | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L6 (osc.)** |
| 7 | | 9.5 mc | 31M | 156° | L7 (osc.)** C3 (ant.) |
| 8 | | 9.5 mc | B | 11.5° | C4 (osc.)*** |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C5 (osc.) C6 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | | Repeat steps 9 and 10 | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C2 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

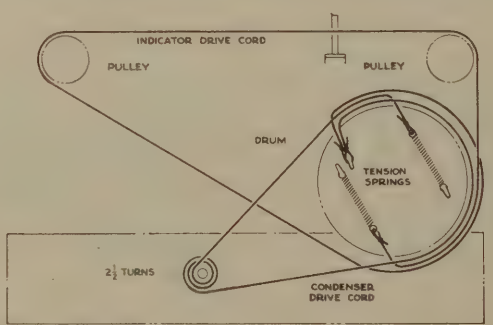
**Peak at minimum position of plunger if two peaks can be obtained.

***Peak at minimum capacity if two peaks can be obtained.

NOTE: Oscillator tracks above signal on all bands.



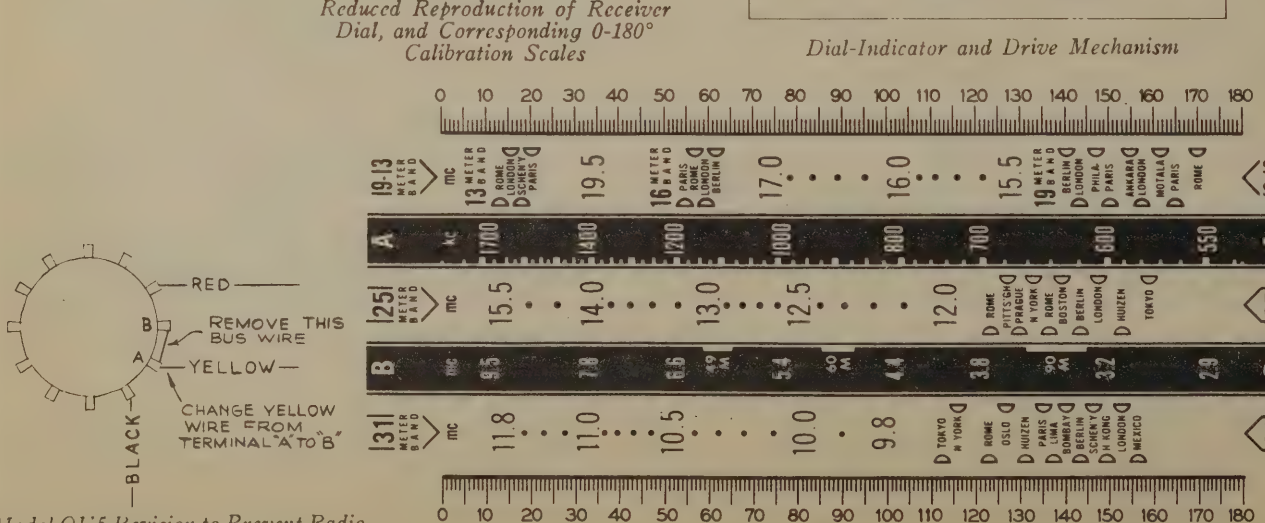

*Tube and Trimmer Locations*




*Dial-Indicator and Drive Mechanism*

## Calibration Scale

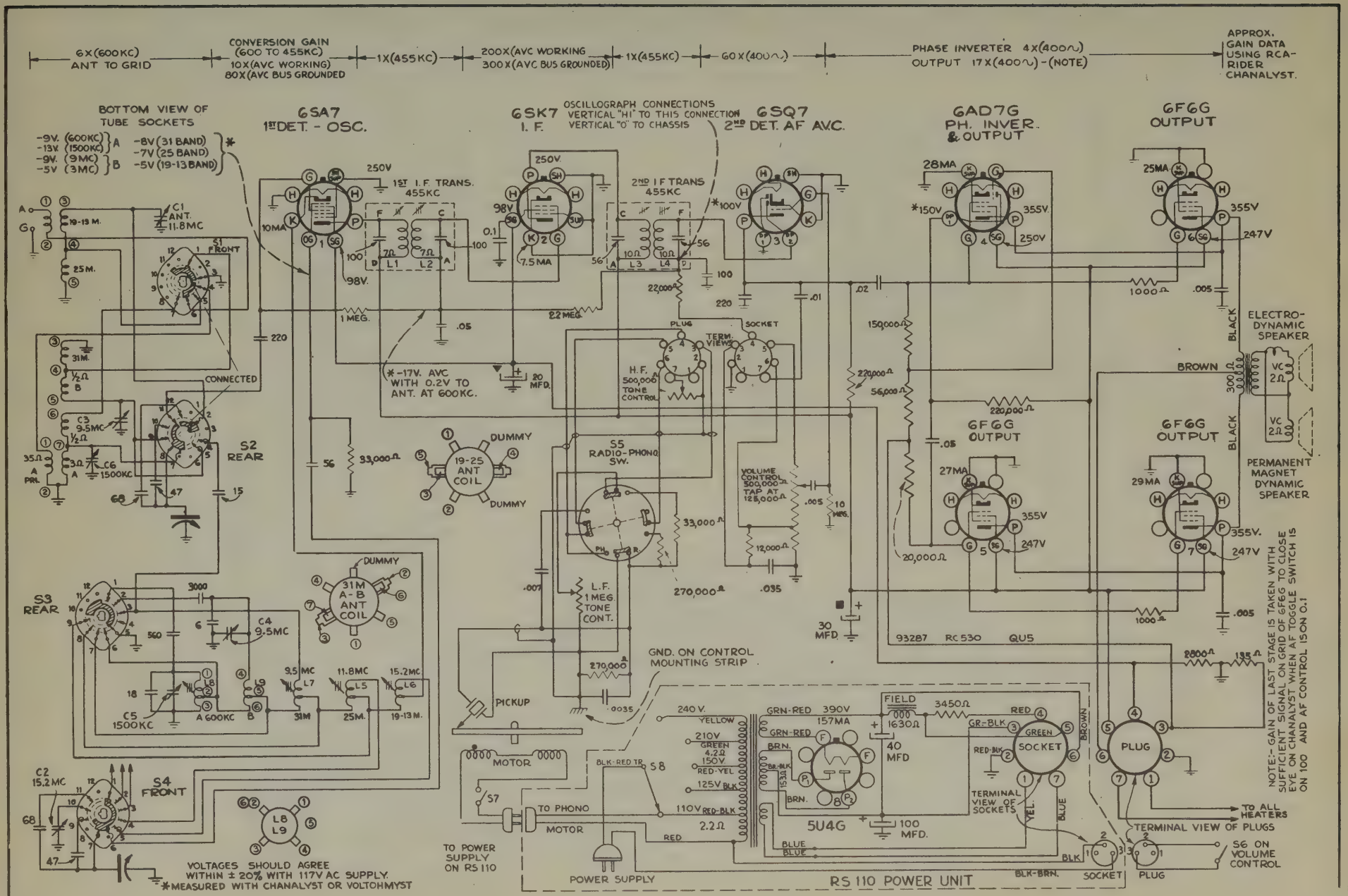
*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*







*Model QU-5 Revision to Prevent Radio Break-Through on Phono*


6X(600KC) ANT TO GRID
CONVERSION GAIN (600 TO 455KC) 10X(AVC WORKING) 80X(AVC BUS GROUNDED)
1X(455KC)
200X(AVC WORKING 300X(AVC BUS GROUNDED)
1X(455KC)
60X(400~)
PHASE INVERTER 4X(400~) OUTPUT 17X(400~)-(NOTE)
APPROX. GAIN DATA USING RCA-RIDER CHANALYST.
BOTTOM VIEW OF TUBE SOCKETS
-9V. (600KC) -13V. (1500KC) A -8V (31 BAND) -7V (25 BAND)
-9V. (9MC) -5V (3MC) B -5V (19-13 BAND)
6SA7 1ST DET. - OSC.
6SK7 I.F.
OSCILLOGRAPH CONNECTIONS VERTICAL "HI" TO THIS CONNECTION VERTICAL "O" TO CHASSIS
6SQ7 2ND DET. AF AVC.
6AD7G PH. INVER. & OUTPUT
6F6G OUTPUT
1ST I.F. TRANS. 455KC
2ND I F TRANS 455KC
*-17V. AVC WITH 0.2V TO ANT. AT 600KC.
H.F. 500,000Ω TONE CONTROL
VOLUME CONTROL 500,000Ω TAP AT 125,000Ω
L.F. 1 MEG TONE CONT.
S1 FRONT
S2 REAR
S3 REAR
S4 FRONT
S5 RADIO-PHONO SW.
19-25 ANT COIL
31M A-B ANT COIL
C1 ANT. 11.8MC
C2 15.2MC
C3 9.5MC
C4 9.5MC
C5 1500KC
C6 1500KC
9.5 MC L7
11.8MC L5
15.2MC L6
L8 L9
PICKUP
MOTOR
S7
S8
TO PHONO MOTOR
TO POWER SUPPLY ON RS110
GND. ON CONTROL MOUNTING STRIP
93287 RC530 QU5
ELECTRO-DYNAMIC SPEAKER
PERMANENT MAGNET DYNAMIC SPEAKER
5U4G
FIELD 1630Ω 3450Ω
40 MFD
100 MFD
30 MFD
TERMINAL VIEW OF SOCKETS
TERMINAL VIEW OF PLUGS
TO ALL HEATERS
S6 ON VOLUME CONTROL
POWER SUPPLY
RS 110 POWER UNIT
NOTE:- GAIN OF LAST STAGE IS TAKEN WITH SUFFICIENT SIGNAL ON GRID OF 6F6G TO CLOSE EYE ON CHANALYST WHEN AF TOGGLE SWITCH IS ON 100 AND AF CONTROL IS ON 0.1
VOLTAGES SHOULD AGREE WITHIN ± 20% WITH 117V AC SUPPLY.
*MEASURED WITH CHANALYST OR VOLTOHMYST

*Schematic Circuit Diagram*

# Replacement Parts

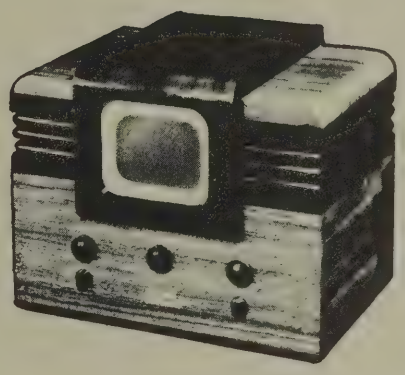
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-530A)** |
| 31767 | Board—"Antenna-Ground" board |
| 35642 | Calibrator—Drive drum calibrator |
| 34654 | Capacitor—Mica trimmer comprising 3 sections (C1, C3, C6) |
| 12714 | Capacitor—Air trimmer—medium (C4, C5) |
| 35646 | Capacitor—6 mmfd. |
| 36012 | Capacitor—15 mmfd. |
| 31350 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 13141 | Capacitor—47 mmfd., silvered mica |
| 30949 | Capacitor—56 mmfd., mica (I-F) |
| 35645 | Capacitor—68 mmfd., ceramic |
| 12723 | Capacitor—56 mmfd., moulded |
| 13057 | Capacitor—68 mmfd., silvered mica |
| 30904 | Capacitor—100 mmfd., mica (I-F) |
| 12720 | Capacitor—100 mmfd., moulded |
| 12694 | Capacitor—220 mmfd. |
| 31433 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 4858 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 35017 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 350 volts, and 1 section of 20 mfd., 150 volts |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—"A" and "B" band |
| 35624 | Coil—Oscillator coil—19-13 meter band |
| 35625 | Coil—Oscillator coil—25 meter band |
| 35626 | Coil—Oscillator coil—31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 35620 | Control—Volume control and power switch (S6) |
| 32634 | Cord—Drive cord (approx. 27 inches overall) |
| 32634 | Cord—Pulley cord (approx. 47 inches overall) |
| 35788 | Core—Adjustable core and stud for "A" and "B" band oscillator coil |
| 31259 | Core—Adjustable core and stud for 19-13 meter, 25 meter, and 31 meter bands oscillator coils |
| 35627 | Drum—Drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 31567 | Plug—3 prong male plug for power switch cable |
| 5040 | Plug—4 contact female plug for speaker cable |
| 14404 | Plug—7 contact male plug on chassis for power supply cable |
| 35641 | Pulley—Drive cord pulley |
| 36104 | Resistor—Voltage divider—1 section 160 ohms—3.6 watts, and 1 section 2,800 ohms—3.3 watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 14020 | Resistor—150,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35637 | Shaft—Tuning shaft |
| 31364 | Socket—Dial lamp socket |
| 36107 | Socket—7 prong—pickup—Tone Control Socket |
| 31251 | Socket—Tube socket |
| 31261 | Spring—Adjustable core spring |
| 13638 | Spring—Drive cord spring |
| 31418 | Spring—Pulley cord spring |
| 35622 | Support—Flywheel shaft support |
| 36105 | Switch—Range switch (S1, S2, S3, S4) |
| 35636 | Transformer—First I-F transformer |
| 35628 | Transformer—Second I-F transformer |
| 2917 | Washer—"C" washer for tuning shaft |

| STOCK No. | DESCRIPTION |
|---|---|
| | **POWER SUPPLY UNIT (RS-110)** |
| 35016 | Capacitor—Electrolytic—comprising 1 section 40 mfd., 450 volts, and 1 section 100 mfd., 25 volts |
| 30868 | Plug—2 contact female plug on motor cable |
| 31572 | Plug—3 contact female plug on power supply cable |
| 14409 | Plug—7 contact female plug on power supply cable |
| 36108 | Resistor—Voltage divider—1 section 3,450 ohms, 7 watts |
| 31251 | Socket—Tube socket |
| 36473 | Transformer—Power transformer—105-130 volts, 140-180 volts, 200-250 volts. 50-60 cycles |
| | **SPEAKER ASSEMBLIES (RL-70M-4 Electrodynamic)** |
| 13867 | Cap—Dust cap |
| 36331 | Coil—Field coil |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5119 | Plug—3-contact female plug for speaker cable |
| 11953 | Plug—4-prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| 36371 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (RL-71A-4 Permanent Magnet)** |
| 13867 | Cap—Dust cap |
| 36145 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36412 | Back—Cabinet back |
| 32885 | Cable—Shielded pickup cable |
| 13103 | Cap—Pilot lamp cap |
| 30303 | Capacitor—.0035 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 35629 | Control—H.F. tone control |
| 36109 | Control—L.F. tone control |
| 36155 | Decalcomania—"Bass" decal |
| 35387 | Decalcomania—"Power-Volume" decal |
| 36074 | Decalcomania—"Radio-Phono." decal |
| 35389 | Decalcomania—"Range" decal |
| 35467 | Decalcomania—"RCA-Victrola" decal |
| 36156 | Decalcomania—"Treble" decal |
| 35391 | Decalcomania—"Tuning" decal |
| 36157 | Dial—Glass dial scale |
| 36037 | Frame—Dial frame complete—less dial and pointer |
| 36415 | Hinge—Cabinet lid hinge |
| 36039 | Indicator—Station selector indicator |
| 36413 | Knob—Door knob |
| 36038 | Knob—Range switch, phono. switch, volume control, tone controls or tuning knob |
| 11765 | Lamp—Dial lamp Mazda 51 |
| 5117 | Lamp—Pilot lamp Mazda 55 |
| 31470 | Mounting—Mounting hardware for motorboard |
| 36395 | Plug—7-prong male plug for phono. radio cable |
| 36246 | Receptacle—Needle book receptacle |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 35740 | Shade—Compartment lamp shade |
| 35575 | Spring—Cabinet lid support spring |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 36413 and 36038 |
| 36414 | Support—Cabinet lid support |
| 36110 | Switch—Phono. switch (S5) |

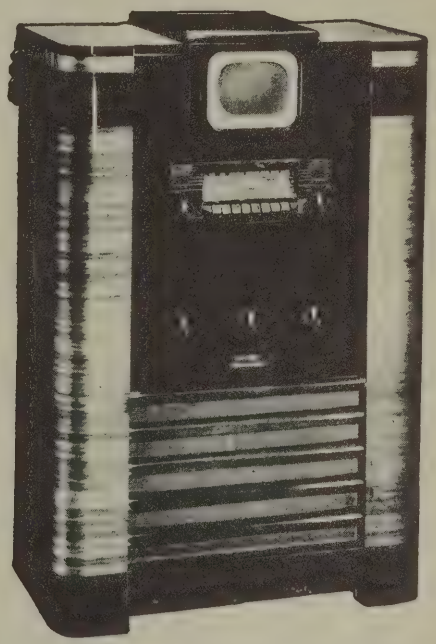
# MODEL TRK-5 and MODEL TT-5

## Seventeen-Tube, AC, Superheterodyne, Five-Television-Channel Receiver with Eight-Tube, Three-Band, AC, Superheterodyne, Broadcast Receiver AND Seventeen Tube, AC, Superheterodyne, Five-Television-Channel Table Model Attachment



**Model TT-5**

| | |
|---|---|
| Height | 16¼ inches |
| Width | 19½ inches |
| Depth (overall) | 19½ inches |
| Net Weight | 57 pounds |
| Shipping Weight | 73 pounds |



**Model TRK-5**

| | |
|---|---|
| Height | 44 inches |
| Width | 29½ inches |
| Depth (overall) | 19½ inches |
| Net Weight | 117 pounds |
| Shipping Weight | 186 pounds |

### Chassis Numbers and Power Supply Ratings

**Model TT-5:**

Chassis KC-3, 105-125 volts, 60 cycles..... 190 watts
Chassis KC-3B, 105-125 volts, 50-60 cycles..... 190 watts

**Model TRK-5:**

Chassis KC-3A, RC-429, RS-89A, 105-125 volts, 60 cycles..... 275 watts (total)
Chassis KC-3C, RC-429, RS-89A, 105-125 volts, 50-60 cycles. .....275 watts (total)

## General Description

Model TRK-5 consists of a console-type, seventeen-tube, direct-viewing, five-channel, Television receiver; and an eight-tube, three-band, broadcast radio receiver enclosed in a modern styled cabinet. Features of the Television Receiver include: Five-inch Kinescope; Styrol (humidity-resisting) i-f and r-f transformer forms; single-station-selector switch; temperature compensated condensers; iron core i-f and r-f tuning; double safety switch protection; safety glass viewing window; automatic brightness control; and automatic volume control.

Model TT-5 is a seventeen-tube, direct-viewing, five-channel, table model Television receiver (picture only), which may be easily connected to any modern broadcast radio receiver for the accompanying sound reproduction. Television features for the Model TT-5 receiver are the same as in the Model TRK-5.

# TELEVISION RECEIVER

## Electrical Specifications

**RCA TUBE COMPLEMENT**

In KC-3, KC-3B (TT-5) and KC-3A, KC-3C (TRK-5) Television Chassis:

(1) RCA-6AC7/1852 ..... 1st Det.
(2) RCA-6J5 ..... Oscillator
(3) RCA-6AB7/1853 ..... 1st Pix. I.F.
(4) RCA-6AC7/1852 ..... 2nd Pix. I.F.
(5) RCA-6AC7/1852 ..... 3rd Pix. I.F.
(6) RCA-6H6 ..... Pix. 2nd Det.-Sync. Sep.
(7) RCA-6V6 ..... Video Amp.
(8) RCA-5BP4/1802-P4 ..... Kinescope
(9) RCA-6AB7/1853 ..... 1st Sound I.F.
(10) RCA-6B8 ..... Sound 2nd Det.-AVC
(11) RCA-6N7 ..... Sync. Amp.
(12) RCA-6N7 ..... Vert. Osc.-Discharge
(13) RCA-6N7 ..... Vert. Output
(14) RCA-6N7 ..... Hor. Osc.-Discharge
(15) RCA-6F8-G ..... Hor. Output
(16) RCA-5U4-G ..... Low Voltage Rect.
(17) RCA-2X2/879 ..... High Voltage Rect.

**TELEVISION CHANNELS (Selector Switch Positions)**

1 ..... 50 to 56 mc.
2 ..... 60 to 66 mc.
3 ..... 66 to 72 mc.
4 ..... 78 to 84 mc.
5 ..... 84 to 90 mc.

Over-all Band Width (approx.) ..... 2.5 mc.
Scanning ..... Interlaced, 525 Line
Horizontal (Line) Scanning Frequency (Sawtooth Wave) ..... 15,750 cps.
Vertical (Field) Scanning Frequency (Sawtooth Wave) ..... 60 cps.
Frame Frequency ..... 30 cps.
Picture Size (approximate mask dimensions) .. 3⅜ x 4⅜ in.
Chassis Base Dimensions ..... 13 x 18 in. Max.; height 9 in.

## IMPORTANT PRECAUTIONS

**CAUTION: These instruments contain high voltage (3,000 volts). Interlock switches are provided for high voltage protection. Do not attempt to service these instruments until you have studied these Service Notes thoroughly, and are familiar with the precautions necessary when servicing these instruments.**

**Do not attempt to measure the high voltage (2,000 volts). ALWAYS replace the red can over the 2X2/879 high voltage rectifier. The most dangerous portion of the H.V. supply is the plate lead of the 2X2/879 tube.**

**Do not eliminate the protection afforded by the interlock switches or measure any voltages on the video chassis unless the gray secondary plate lead of the high voltage transformer has been unsoldered, a rubber tube Stock No. 34096 slipped over the lead, and taped to the lead.**

**Use only one hand when working on the high voltage portion of the chassis, and always connect a shorting lead first to ground, then to the high side of the first high voltage filter capacitor.**

**Always wear gloves and goggles when handling Kinescopes.**

**A good ground should be connected to the receiver at all times.**

## Precautions in Handling Kinescopes

The Kinescope bulb encloses a high vacuum and due to its large surface area, is subjected to considerable air pressure. For these reasons, Kinescopes must be handled with more care than an ordinary receiving tube.

The large end of the Kinescope bulb — particularly that part at the rim of the viewing surface — must not be struck, scratched or subjected to more than moderate pressure at any time. If the tube sticks, or fails to slip into its socket or shield smoothly, investigate and remove the cause of trouble. Do not force the tube.

All RCA Kinescopes are shipped in special cartons and should always be left in the cartons until ready for installation in the receiver. Keep the carton for future use.

**CAUTION: Do not open the shipping carton, install or handle the Kinescope in any manner unless shatter-proof goggles and heavy gloves are worn. People not so equipped should be kept away while handling Kinescopes. Keep Kinescope away from body when handling.**

## Notes

1. This service note includes all changes that have been incorporated since initial production, including deletion of the 44-50 mc. channel and addition of the 60-66 mc. channel.

2. Detailed explanation of the receiver circuit operation may be found in the booklet: **Practical Television by RCA.**

3 **Alignment.** — Because of the special equipment and procedure necessary for the proper alignment of these receivers, the alignment will not be covered in this service note.

## Operation Model TRK-5

The power-volume control on the broadcast radio receiver turns on the power for the complete receiver. Pushing the button marked "Television" on the push button panel turns on the Television receiver, if the above power control is "On." The volume control of the broadcast receiver also controls the Television sound volume level.

**Station Selector and Fine Tuning.**—The outer ring "O" section of the central dual control knob on the Television panel selects the station from which it is desired to receive television transmission.

Five television channels are covered as follows:

(1) 50 to 56 M.C.
(2) 60 to 66 M.C.
(3) 66 to 72 M.C.
(4) 78 to 84 M.C.
(5) 84 to 90 M.C.

Set the station selector to the number corresponding to the frequency of the station from which it is desired to receive Television Broadcasts.

The inner section "I" of this knob is used for fine tuning and may eliminate moving ripples or distortion if due to interfering radio signals.

Before the Television portion of the receiver is turned "ON" it is advisable to turn the Brightness and Contrast controls completely counter-clockwise to reduce the illumination of the spot which appears on the Kinescope before the sweep circuits have started functioning.

**Contrast and Brightness Controls.**—The inner "I" section of the "Contrast" - "Brightness" controls is the "Contrast" control and varies the black and white tones of the picture being received. Too little contrast makes the picture all half-tones or grays. Turning clockwise increases contrast from grays, to black and white. See Operating Instructions for this receiver.

The outer ring "O" is the Brightness Control and affects the average illumination of the picture. Turning clockwise increases the brightness. See Operating Instructions for this receiver.

**Hold Controls.**—The dual knobs on the Television panel marked "Horizontal" and "Vertical" Hold, control the picture stability. The inner section designated by a "I" is the Horizontal Hold Control and when being set should be turned slowly to the point at which the picture "locks in" horizontally. See Operating Instructions for this receiver.

The outer ring section designated by "O" is the Vertical Hold Control and when being set should be turned to the point where the picture "locks in" vertically.

These two controls on this dual knob should not ordinarily require readjustment after good picture reception has once been obtained. An occasional resetting may be necessary due to changing to a different station, and to the gradual aging of the tubes.

**Focus Control.**—This control is located on the rear of the Video chassis, and controls the electron beam focus of the Kinescope. Ordinarily, after once being focused the Kinescope should not require re-focusing for a considerable length of time.

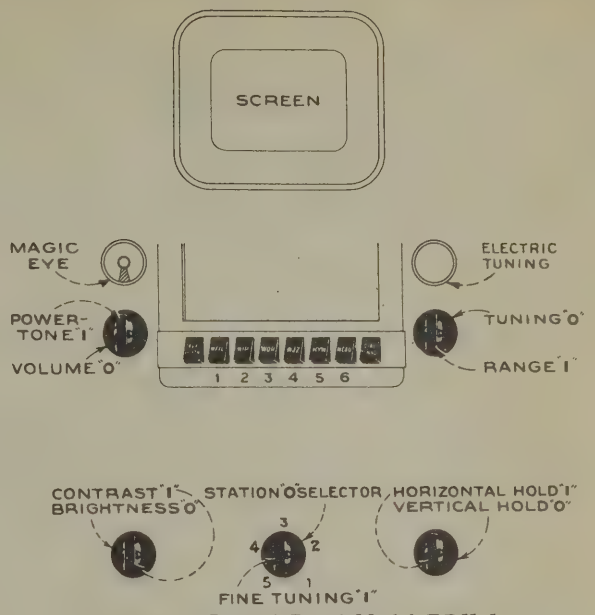



*Figure 1—Control Panel Model TRK-5*

## Operation Model TT-5

The operation of Model TT-5 is the same as that for the Model TRK-5 except that there is a separate "ON-OFF" switch, and a separate sound volume control because the broadcast radio receiver is not included in this model. When Model TT-5 is connected to a broadcast receiver for the Television sound reproduction, the broadcast receiver volume control should be turned to maximum and the Television sound volume controlled with the control on the Television Receiver.

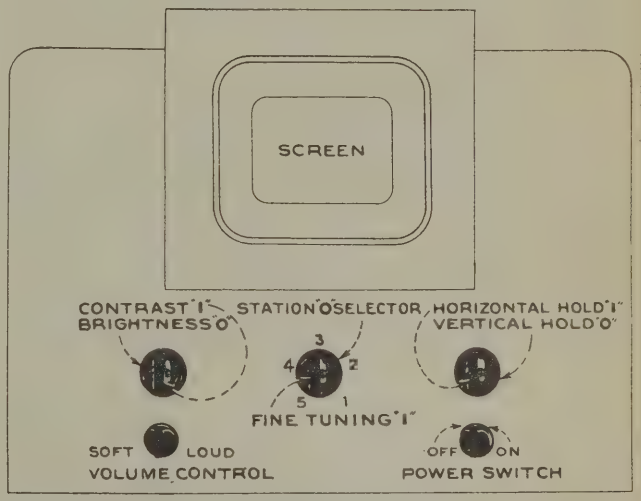



*Figure 2—Control Panel Model TT-5*

## SERVICE DATA

Kinescope Installation Models TRK-5, TT-5: Refer to figure 3.

1. Remove back cover from cabinet.
2. Remove Kinescope mounting shield from shipping carton.
3. Using gloves and goggles remove Kinescope from shipping carton and place in the cone-shaped mounting shield.
4. Guide the Kinescope and mounting shield carefully into the cabinet, placing the Kinescope firmly up against the mask and viewing window. Fasten the mounting shield firmly in place with the thumb screw provided, so that it holds the Kinescope firmly against the mask. If the Kinescope does not line up properly with the mask, loosen the screws "A" and nut "B" and adjust in the direction desired.
5. After the receiver is operating, the Kinescope may be rotated to properly square up the picture with the mask.

**CAUTION:** When rotating tube the power should be turned "OFF."

**Adjustments.**—There are a series of screwdriver slot adjustments at the rear of the Video chassis used to obtain the proper picture size and centering. These adjustments are explained fully in the receiver operating instructions, and also in the booklet: **Practical Television by RCA.**

When the receiver is moved from one location to another, some readjustment of these controls may be necessary.

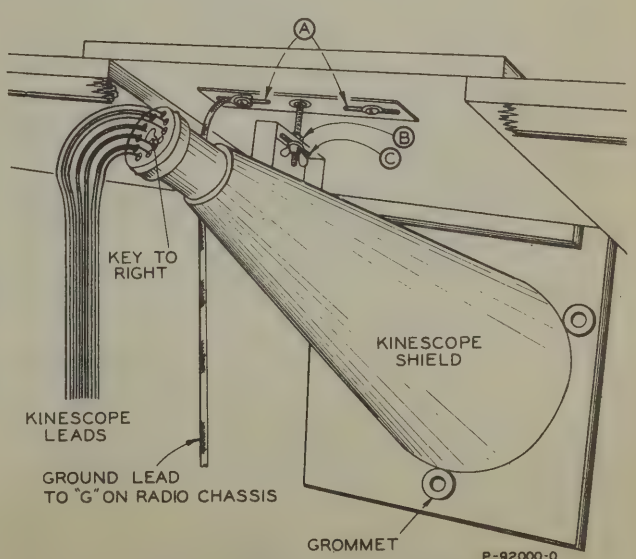



*Figure 3—Kinescope Installation*

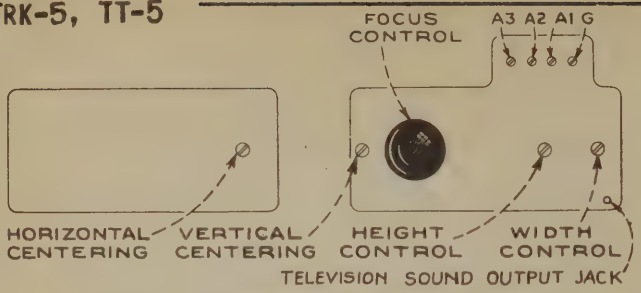



*Figure 4—Adjustments at Rear of Chassis*

# Video Chassis KC-3, KC-3B (TT-5) KC-3A, KC-3C (TRK-5)

No attempt should ever be made to measure the high (2,000 volts) voltage, because of the dangers and difficulties involved. If at any time it becomes necessary to service the high voltage circuit, the suspected parts should be replaced by parts known to be in good operating condition.

Always replace the red can over the 2X2/879 high voltage rectifier.

The most dangerous portion of the receiver is the plate (top cap) lead for the 2X2/879 high voltage rectifier. Always be **very** careful when working near or with this lead.

When working on the high voltage supply portion of this chassis, the following precautions should be observed:

1. Remove power supply cord from the power supply socket.
2. Use only one hand at a time.
3. Connect a shorting lead between ground (firstly) and to the high voltage side.
4. Whenever working with the oil-filled high voltage filter capacitors, keep a constant short across the capacitor, as these capacitors do not completely lose their charge after being discharged a single or several subsequent times.
5. Only one person at a time should work on the unit to prevent any misunderstanding which may result in an accident.

When any changes are made on the Video portion of the chassis, the locations of leads and parts should be returned as closely as possible to their original positions.

**Service Hints:**

1. If the picture "tears out" when the receiver is jarred it may be due to microphonic 6AC7/1852, 6AB7/1853, or 6J5 tubes.

2. The 6J5 oscillator tube should be removed without rocking it in its socket to loosen it, as the motion may cause the 80.5 mmf capacitor C16 to break off.

3. The coils or straps in the h.f. oscillator circuits **should not be touched or moved** or the alignment of the receiver will be disturbed.

4. The two Video coupling capacitors C44, 45, should be kept clear of chassis.

5. In some cases the metal Kinescope mounting shield may become magnetized by the earth's or some nearby magnetic field, and thus distort the picture on the screen towards the magnetized portion of the shield. The shield can be demagnetized by passing it slowly through a solenoid which is energized by an a-c current.

6. A special Kinescope shield is used on the 50-60 cycle models, identified by an 1/8-inch hole in the outer shield near the mounting bracket. Do not jar or drop the shield, and keep it away from the loudspeaker field to prevent magnetization.

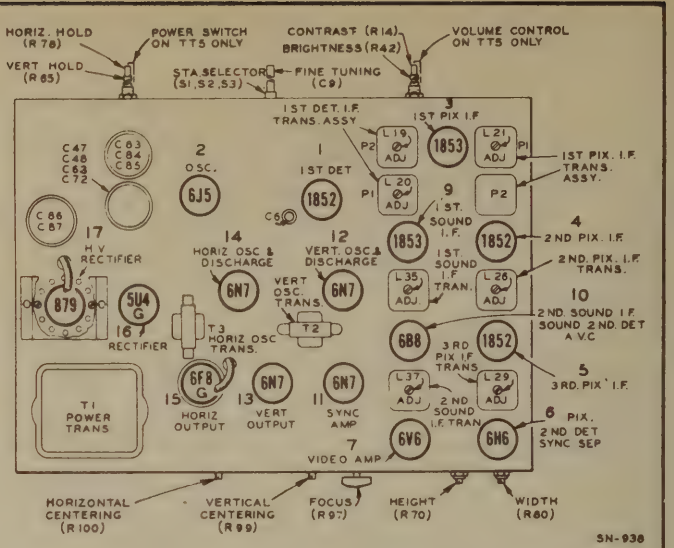



*Figure 5—Top View Television Chassis*

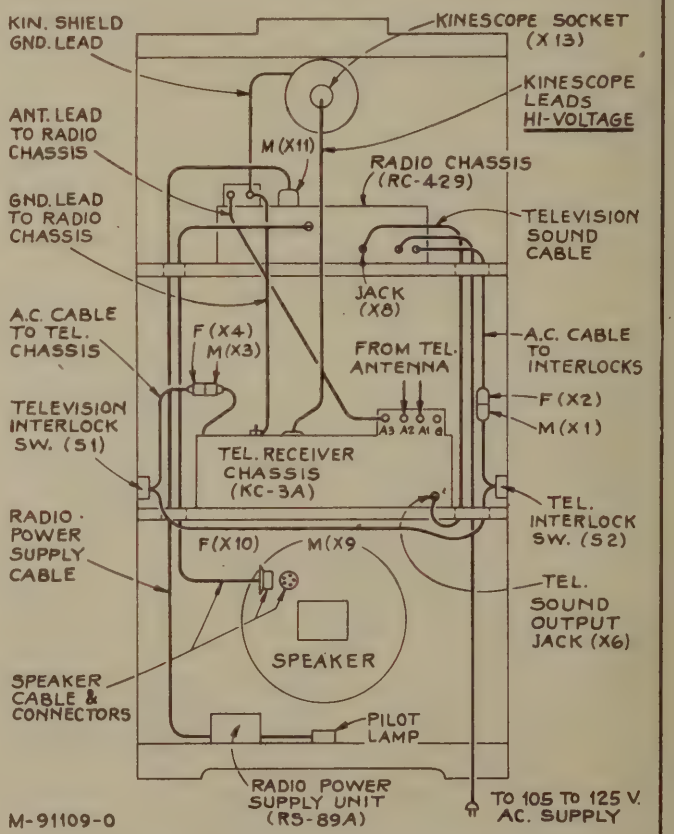



*Figure 6—Rear View Model TRK-5*

# Antenna Installation

In most cases, the antenna should not be installed permanently on the apartment or residence roof until the quality of the picture reception has been observed on a Television Receiver. A temporary transmission line can be run between receiver and the antenna allowing sufficient slack to permit moving the antenna. Then, with a telephone system connecting an observer at the receiver and an assistant on the roof to find an antenna location, the antenna can be positioned to give the most satisfactory results on the received signal. A shift of only a few feet in antenna position or direction may effect a tremendous difference in picture reception. Whenever possible, the antenna location should be chosen or erected so the antenna is not only broadside to the transmitter but removed as far as possible from highways, hospitals, and doctors' offices, and similar sources of interference. Auto ignition and diathermy apparatus may cause noise interference which spoils the picture.

In mounting any antenna, care must be taken to keep the

antenna rods or pickup wires proper at least ¼ wave length (at least 6 feet) away from other antennas, metal roofs and gutters or metal objects.

Under certain extremely unusual conditions, it may be possible to rotate or position the antenna so it receives the cleanest picture over a reflected path. If such is the case, the antenna should be so positioned. However, such a position may give variable results as the nature of reflecting surfaces may vary with weather conditions, as a wet surface has been known to have different reflecting characteristics than a dry surface.

In short, a television receiving antenna and its installation must conform to much higher standards than an antenna for reception of International Short Wave and Standard Broadcast signals because:

(1) Intervening obstacles have a pronounced shielding effect on the ultra-high frequency waves producing low intensity signals. Severe trouble with multi-path transmissions may be experienced, especially in congested city areas.

(2) The picture signal is comprised of a very wide band or range of frequencies, all of which must be received with good efficiency.

(3) It must be continually remembered that the discernment of the eye is much more critical than that of the ear.

For further information on antennas and antenna installation, see RCA Booklet entitled: "Practical Television by RCA" as well as the specific instructions accompanying the RCA Television antennas.

# Television Service Suggestions

1. **Intensely bright round spot; no deflection.** If an intensely bright round spot appears on the Kinescope, and cannot be dimmed with the brightness control, turn the set off immediately. This indicates lack of deflection and lack of voltage across the brightness control. (Note that a bright spot may appear for several seconds if the receiver is turned on again too soon after it has been shut off. Avoid doing this.)

2. **Thin vertical line; no horizontal deflection.** If only a thin vertical line appears on the Kinescope when the brightness control is advanced, it indicates lack of horizontal deflection. Check the 6N7 horizontal oscillator and the 6F8-G horizontal output tube.

3. **Thin horizontal line; no vertical deflection.** If only a thin horizontal line appears, it indicates failure of vertical deflection. Check the 6N7 vertical oscillator and the 6N7 vertical output tube.

4. **Excessive hum; defective high-voltage filter.** Turn contrast control fully counter-clockwise and adjust the brightness control to secure faint illumination of the raster. "Lock in" any residual hum by adjusting the vertical hold control. Normally the hum should be scarcely discernible. Excessive hum may be caused by a defective (low value) filter resistor (R91, R92), which in turn may be caused by a shorted 2X2/879 high-voltage rectifier. Observe necessary precautions before checking the filter.

5. **No focus; off-value high-voltage resistors.** Adjust the focus control to secure sharpest lines on the raster. The individual lines can be seen most readily by turning the horizontal hold control to the lowest frequency (counter-clockwise). The lines should be in sharpest focus at one setting of the focus control. Inability to pass through a definite point of focus indicates incorrect voltages, which may be caused by off-value high-voltage resistors. Inability to focus may also be due to a defective Kinescope.

6. **Failure to lock-in; sync trouble.** Turn band switch to a channel that is in operation. Adjust the fine-tuning control for clearest sound, which should be at approximately half-capacity position. Turn contrast control full counter-clockwise. Turn brightness control until the Kinescope is faintly illuminated. Turn contrast control clockwise until the picture signal is evident. Lock in the picture horizontally and vertically. Adjust the contrast and brightness controls for best contrast.

If the picture will not lock in horizontally or vertically, change the 6N7 sync tube. Interchanging 6N7's may correct

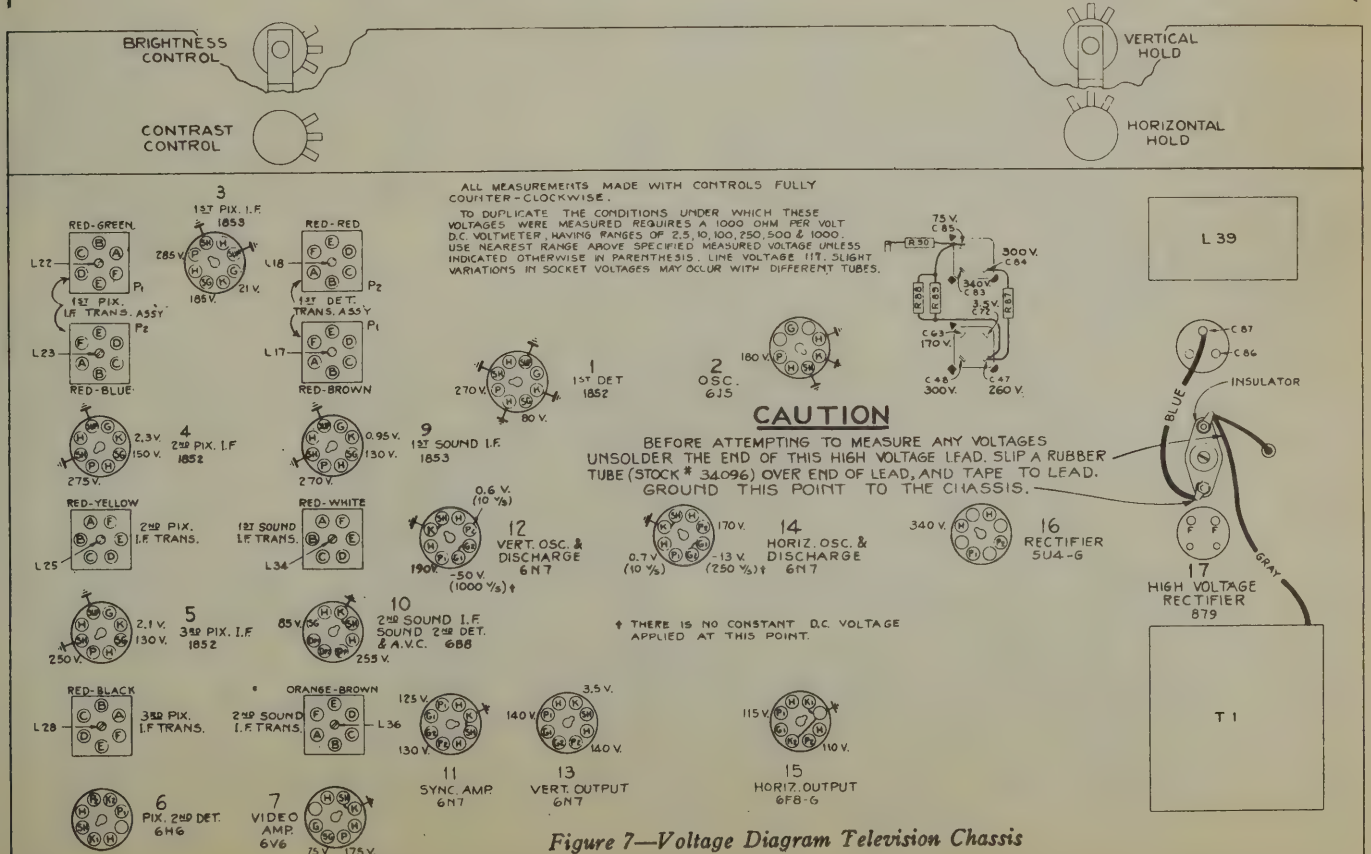

BRIGHTNESS CONTROL
CONTRAST CONTROL
VERTICAL HOLD
HORIZONTAL HOLD
ALL MEASUREMENTS MADE WITH CONTROLS FULLY COUNTER-CLOCKWISE.
TO DUPLICATE THE CONDITIONS UNDER WHICH THESE VOLTAGES WERE MEASURED REQUIRES A 1000 OHM PER VOLT D.C. VOLTMETER, HAVING RANGES OF 2.5, 10, 100, 250, 500 & 1000. USE NEAREST RANGE ABOVE SPECIFIED MEASURED VOLTAGE UNLESS INDICATED OTHERWISE IN PARENTHESIS. LINE VOLTAGE 117. SLIGHT VARIATIONS IN SOCKET VOLTAGES MAY OCCUR WITH DIFFERENT TUBES.
CAUTION
BEFORE ATTEMPTING TO MEASURE ANY VOLTAGES UNSOLDER THE END OF THIS HIGH VOLTAGE LEAD. SLIP A RUBBER TUBE (STOCK # 34096) OVER END OF LEAD, AND TAPE TO LEAD. GROUND THIS POINT TO THE CHASSIS.
† THERE IS NO CONSTANT D.C. VOLTAGE APPLIED AT THIS POINT.
1 1ST DET 1852
2 OSC. 6J5
3 1ST PIX. I.F. 1853
4 2ND PIX. I.F 1852
5 3RD PIX. I.F 1852
6 PIX. 2ND DET. 6H6
7 VIDEO AMP. 6V6
9 1ST SOUND I.F. 1853
10 2ND SOUND I.F. SOUND 2ND DET. & A.V.C. 6B8
11 SYNC. AMP 6N7
12 VERT. OSC. & DISCHARGE 6N7
13 VERT. OUTPUT 6N7
14 HORIZ. OSC. & DISCHARGE 6N7
15 HORIZ. OUTPUT 6F8-G
16 RECTIFIER 5U4-G
17 HIGH VOLTAGE RECTIFIER 879
RED-GREEN
RED-BLUE
RED-RED
RED-BROWN
RED-YELLOW
RED-WHITE
RED-BLACK
ORANGE-BROWN
1ST PIX. I.F. TRANS. ASSY
1ST DET. TRANS. ASSY
2ND PIX. I.F. TRANS.
1ST SOUND I.F. TRANS.
3RD PIX. I.F. TRANS.
2ND SOUND I.F. TRANS.
L 39
T 1
INSULATOR
BLUE
GRAY

*Figure 7—Voltage Diagram Television Chassis*

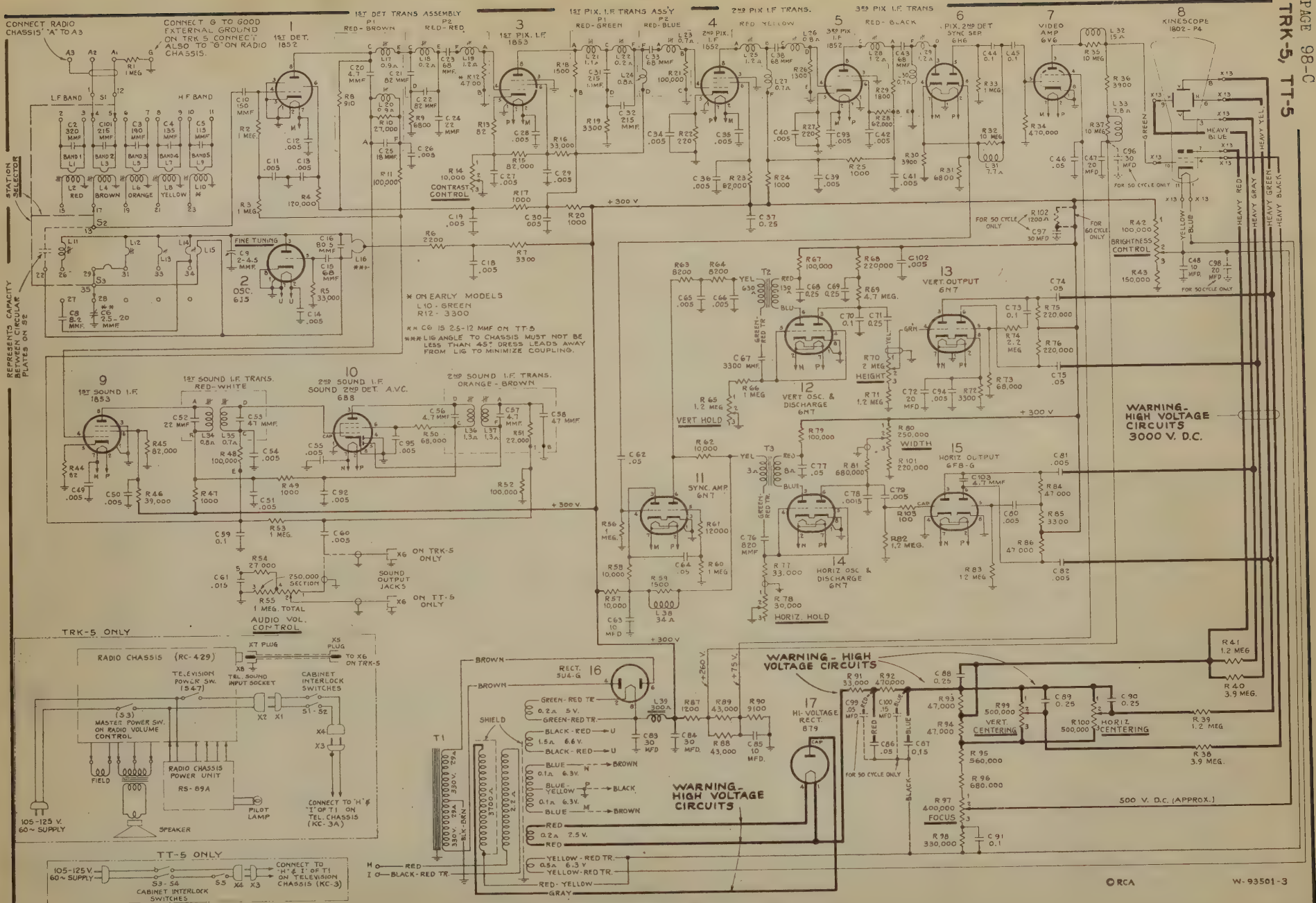



*Figure 8 - Schematic Diagram Television Chassis*

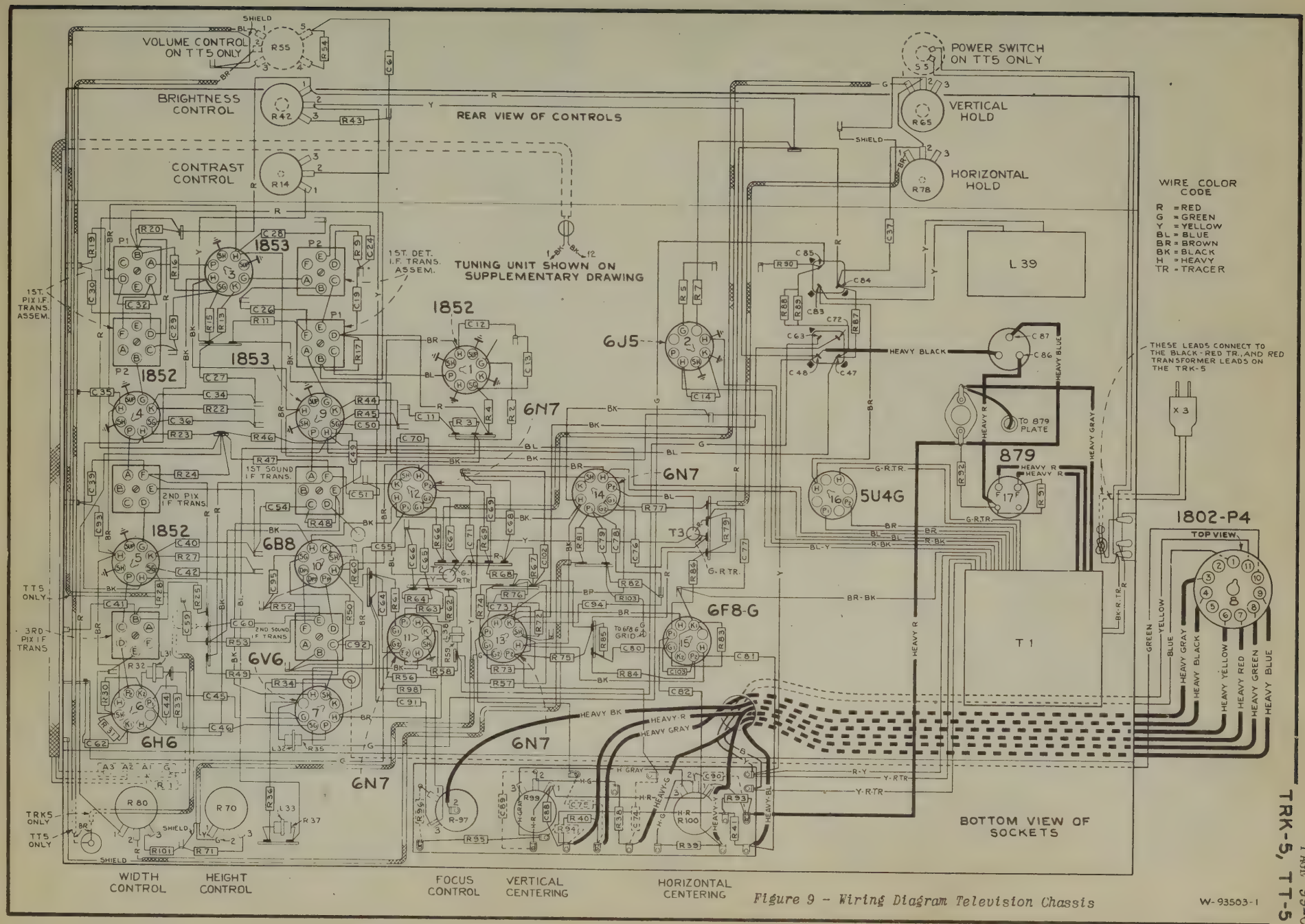



*Figure 9 - Wiring Diagram Television Chassis*

W-93503-1

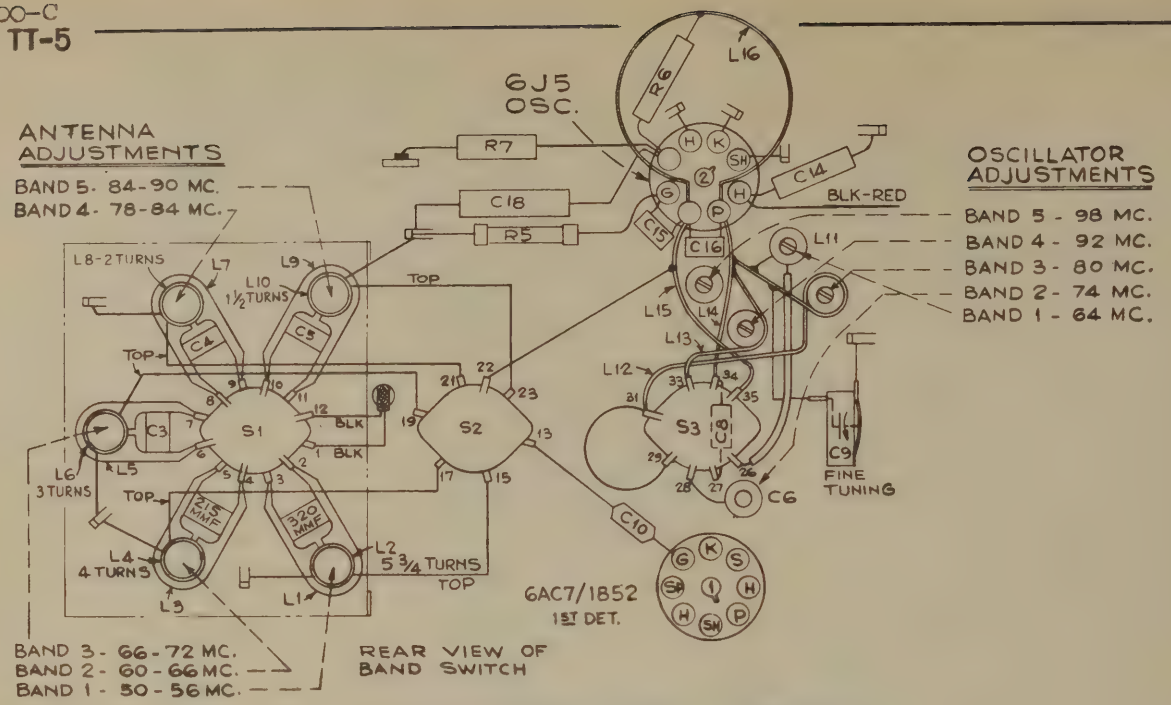



*Figure 10—R. F.-Oscillator Unit Wiring and Adjustments*

## Television Service Suggestions (Continued )

the trouble. Otherwise check the resistors, capacitors and voltages in the sync circuits. The capacitors should be checked for opens and leakage. Do not forget that advancing the contrast control too far on a strong signal will cause the picture to "tear" out of horizontal sync.

7. **Weak picture; insensitive receiver.** A simple sensitivity check can be made by removing the antenna from the receiver and turning the contrast control full clockwise with brightness control at normal position. This should produce some evidence of tube noise which will appear as speckles on the Kinescope raster. When the antenna is connected to the receiver, there should be more pronounced speckles due to random noise, streaks due to ignition interference from passing cars, and possibly hum lines that can be locked in vertically, due to sparking in 60-cycle circuits, diathermy, etc. Sensitivity can be estimated in this way, just as with an ordinary radio receiver, by observing the amount of noise and the strength of the weaker stations. Check each band for sensitivity. Noise conditions vary from band to band. Certain types of interference, such as diathermy, may exist in only one band and may be seen but not heard, or vice versa.

If the receiver is insensitive, check all tubes in the picture-IF amplifier and the 1st-detector by substituting a good tube in each socket. If the trouble is not due to tubes, it may be necessary to check the gain of each picture stage.

8. **Small picture size.** Adjust picture size and centering. Inability to secure a full-sized picture may be due to low-voltage on the 300-volt bus. Check the low-voltage rectifier.

9. **Inability to center picture.** This may be due to low voltage across the centering controls caused by a defective rectifier or capacitor, or low line voltage. Another possibility is that the elements in the Kinescope may be tilted. This can be checked as follows:

With the brightness control at normal setting, turn the receiver on and observe the position of the illuminated spot during the few seconds before the horizontal and vertical deflection voltages start operating. The illuminated spot should be in the center of the Kinescope (its position during these few seconds is not affected by the centering controls). If the spot is off center, it is a definite indication that the Kinescope "gun" is tilted.

10. **Distorted sound or sound in picture.** An open in one side of the antenna transmission line can cause distorted sound. Other possibilities include:

(a) If the sound-IF response curve is not linear for 75 kilocycles on each side of 8.25 mc., distortion will result.

(b) Inaccurate adjustment of the oscillator frequency on any channel may result in no sound or distorted sound, due to the fact that the sound-IF beat frequency will not be 8.25 mc. If the oscillator frequency is too low, the beat note, instead of falling on the high-frequency slope of the sound-IF response curve, may fall on the low-frequency slope. In this case, the sound may be satisfactory, but operation on this side of the curve should be avoided. In some localities, it results in sound image interference from other channels.

A quick and definite method to check the oscillator frequency is as follows:

(a) Tune in a television station.

(b) Turn the fine tuning trimmer to minimum capacity. This should produce some evidence of sound in the picture. The sound usually appears as horizontal bars of varying density, and these vary in step with the speech or music. The bars disappear when the voice or music stops.

(c) Turn the trimmer for best sound quality. This should correspond to approximately half-capacity of the trimmer.

(d) Turn the trimmer toward maximum capacity. If the slope of the sound-IF response curve is narrow, this will move the beat on to the peak of the response curve, producing low volume and severe distortion.

On service work in the home or where test equipment is not available, if one or more of the oscillator frequencies require re-adjustment, the recommended procedure is as follows:

(a) Tune in the television station on the channel which requires re-adjustment of the oscillator frequency.

(b) Turn the fine-tuning trimmer to minimum capacity.

(c) Turn the magnetite-core for the particular oscillator coil toward the highest frequency position (core moved away from the coil). This will definitely put sound in the picture. Turn the core in the opposite direction, to lower the oscillator frequency, until the sound is barely perceptible in the picture. Leave the core in this position.

(d) Now, by turning the fine-tuning trimmer to half-capacity, it should be possible to secure good tone quality with no trace of sound in the picture.

If the sound-IF is deliberately moved into the picture-IF by adjusting the oscillator core to produce the highest frequency, the effect of the sound-IF interference will produce a "reversed" image, somewhat like a film negative.

The customer should be instructed to adjust the fine-tuning control for best sound quality, at which point there is no sound in the picture. If the set is turned on in a cold room, it may be necessary for the customer to readjust the fine-tuning trimmer to compensate for the slight drift in oscillator frequency during the warm-up period.

# Radio Receiver Chassis No. RC-429 and Socket Power Unit No. RS-89A

## Eight-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" band) ..... 540-1720 kc
Medium Wave ("B" band) ..... 2.3-7.0 mc
Short Wave ("C" band) ..... 7.0-22 mc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6A8-G ..... 1st-Det., and Osc.
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6Q7 ..... 2nd-Det., A.V.C., 1st Audio
(4) RCA-6J5 ..... Phase Inverter
(5) RCA-6K6-G ..... Power Output
(6) RCA-6K6-G ..... Power Output
(7) RCA-6U5 ..... "Magic Eye"
(8) RCA-5Y3-G (in SPU RS-89A) .... Full-Wave Rectifier

Dial Lamps ..... Mazda No. 44, 6.3 volts, .25 amp.

Power Supply Rating ..... 105-125 volts, 50-60 cycles, 75 watts

POWER OUTPUT

Undistorted ..... 5 watts
Maximum ..... 5.5 watts

ELECTRIC TUNING RANGES

Two stations between approximately ..... 550-950 kc
Two stations between approximately ..... 690-1,225 kc
Two stations between approximately ..... 890-1,500 kc

LOUDSPEAKER (RL-70H-5)

Type ..... 12-inch electrodynamic
Voice-Coil impedance ..... 2.2 ohms at 400 cycles

## Mechanical Specifications

RC-429 CHASSIS BASE DIMENSIONS

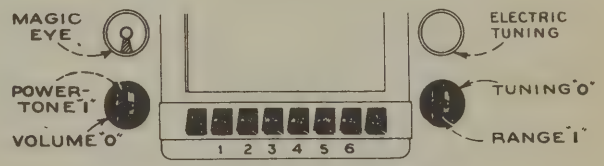
Height ..... 2-½ inches
Width ..... 13 inches
Depth ..... 6-½ inches
Over-all Chassis Height ..... 6-½ inches
Tuning Drive Ratio ..... 12 to 1

## General Description

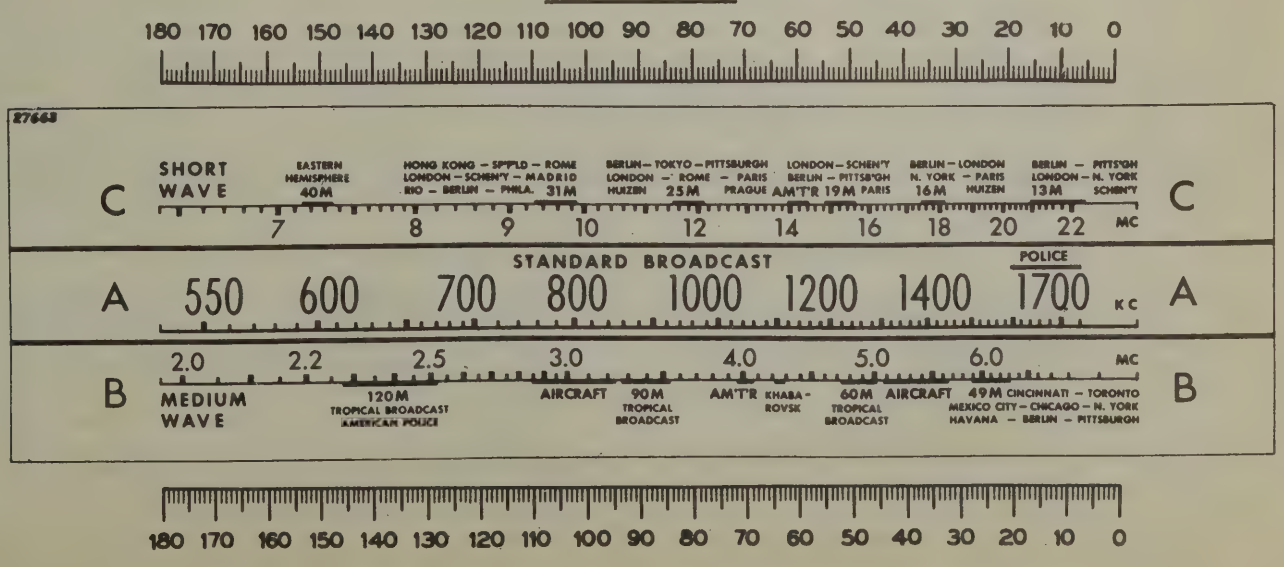
Radio receiver chassis No. RC-429 is used in RCA Victor Television console Model TRK-5.

The audio output of the television chassis is connected to the audio input of the RC-429 chassis by means of jack X-8 and the left-hand push-button switch (S44, S45, S46).

A separate plug-in power supply unit, RS-89A, is used to supply heater and plate voltage to the RC-429 chassis. Service data and diagrams for the power unit are contained in the following pages.




*Location of Controls (Radio)*


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27663
C
SHORT WAVE
EASTERN HEMISPHERE 40M
HONG KONG – SP'FLD – ROME LONDON – SCHEN'Y – MADRID RIO – BERLIN – PHILA. 31M
BERLIN – TOKYO – PITTSBURGH LONDON – ROME – PARIS HUIZEN 25M PRAGUE
LONDON – SCHEN'Y BERLIN – PITTSB'GH AM'T'R 19M PARIS
BERLIN – LONDON N. YORK – PARIS 16M HUIZEN
BERLIN – PITTS'GH LONDON – N. YORK 13M SCHEN'Y
7 8 9 10 12 14 16 18 20 22 MC
STANDARD BROADCAST
POLICE
A
550 600 700 800 1000 1200 1400 1700 KC
2.0 2.2 2.5 3.0 4.0 5.0 6.0 MC
B
MEDIUM WAVE
120M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90M TROPICAL BROADCAST
AM'T'R KHABAROVSK
60M TROPICAL BROADCAST
AIRCRAFT
49M CINCINNATI – TORONTO MEXICO CITY – CHICAGO – N. YORK HAVANA – BERLIN – PITTSBURGH
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

# Alignment Procedure
## (RADIO CHASSIS)

**Cathode-Ray Alignment** is the preferable method. Connections for the oscilloscope are shown in the chassis drawing.

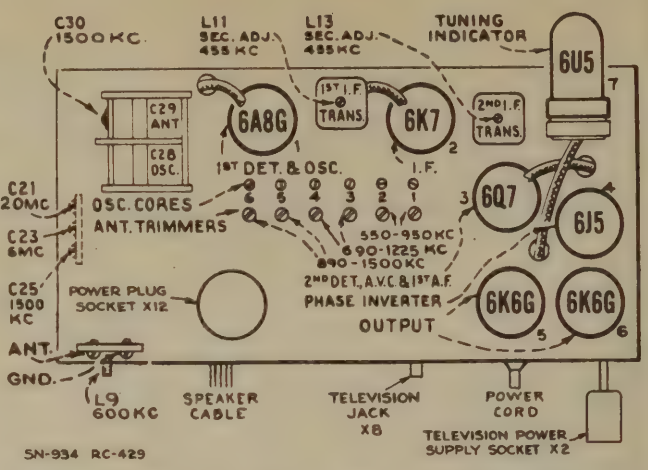
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-




condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Step | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L12 and L13 (2nd I-F Trans.) |
| 2 | 6A8-G 1st-Det. grid cap, in series with .01 mfd. | | | L10 and L11 (1st I-F Trans.) |
| 3 | Antenna terminal, in series with 200 mmfd. | 600 kc | 600 kc 150.5° | L9 (osc.) |
| 4 | | 1,500 kc | 1,500 kc 28° | C25 (osc.) C30 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna terminal, in series with 300 ohms | 6 mc | 6 mc 26.5° | C23 (osc.)* |
| 7 | | 20 mc | 20 mc 22° | C21 (osc.)* |
| 8 | Follow "Adjustments for Electric Tuning." | | | |

* Use minimum capacity peak if two peaks can be obtained, and check for image by tuning radio approximately 910 kc lower.
**Note:** The oscillator tracks above the signal on all bands.

# Adjustments for Electric Tuning

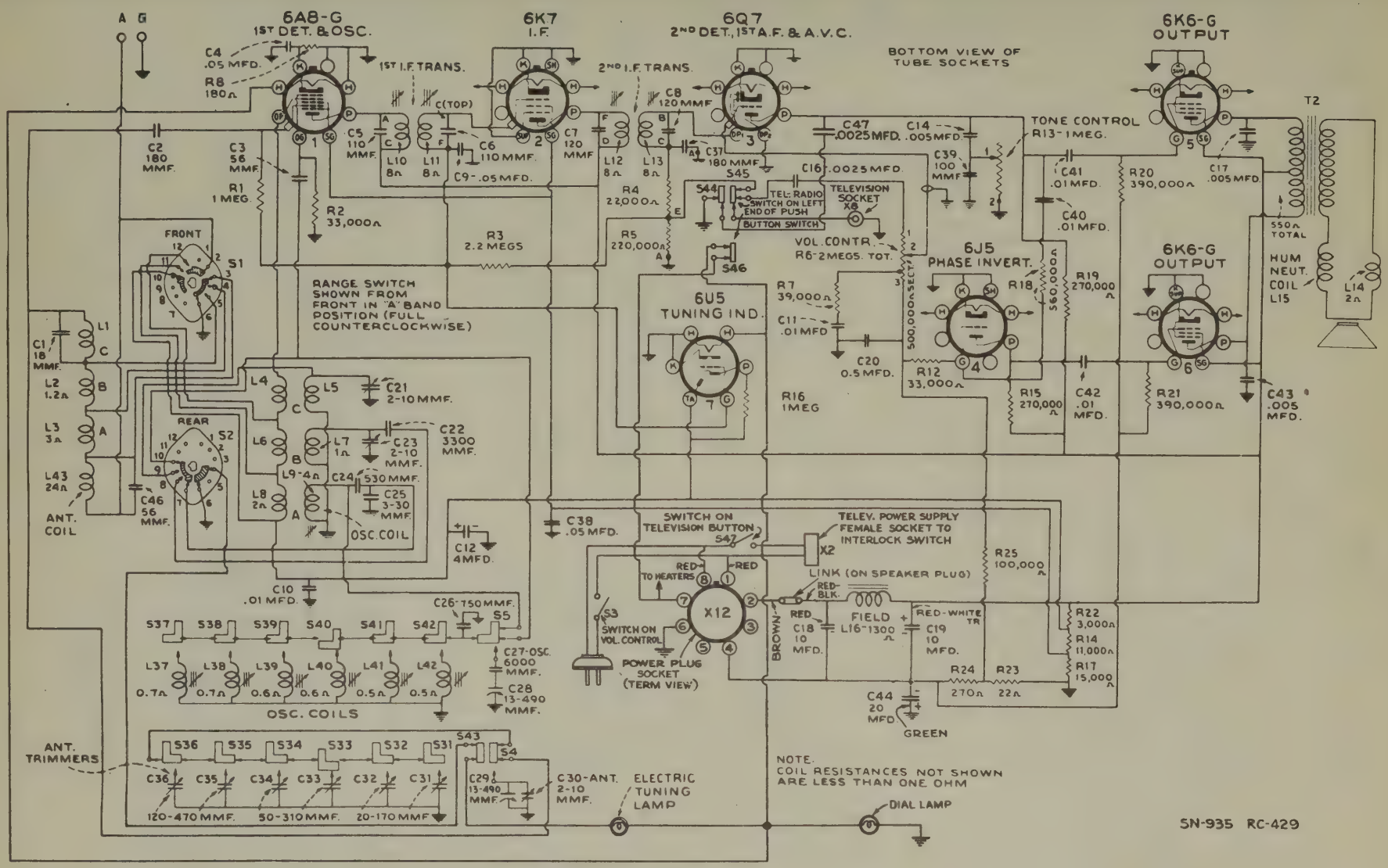
These models have eight push buttons. The left-hand button is a Television switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

**Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**

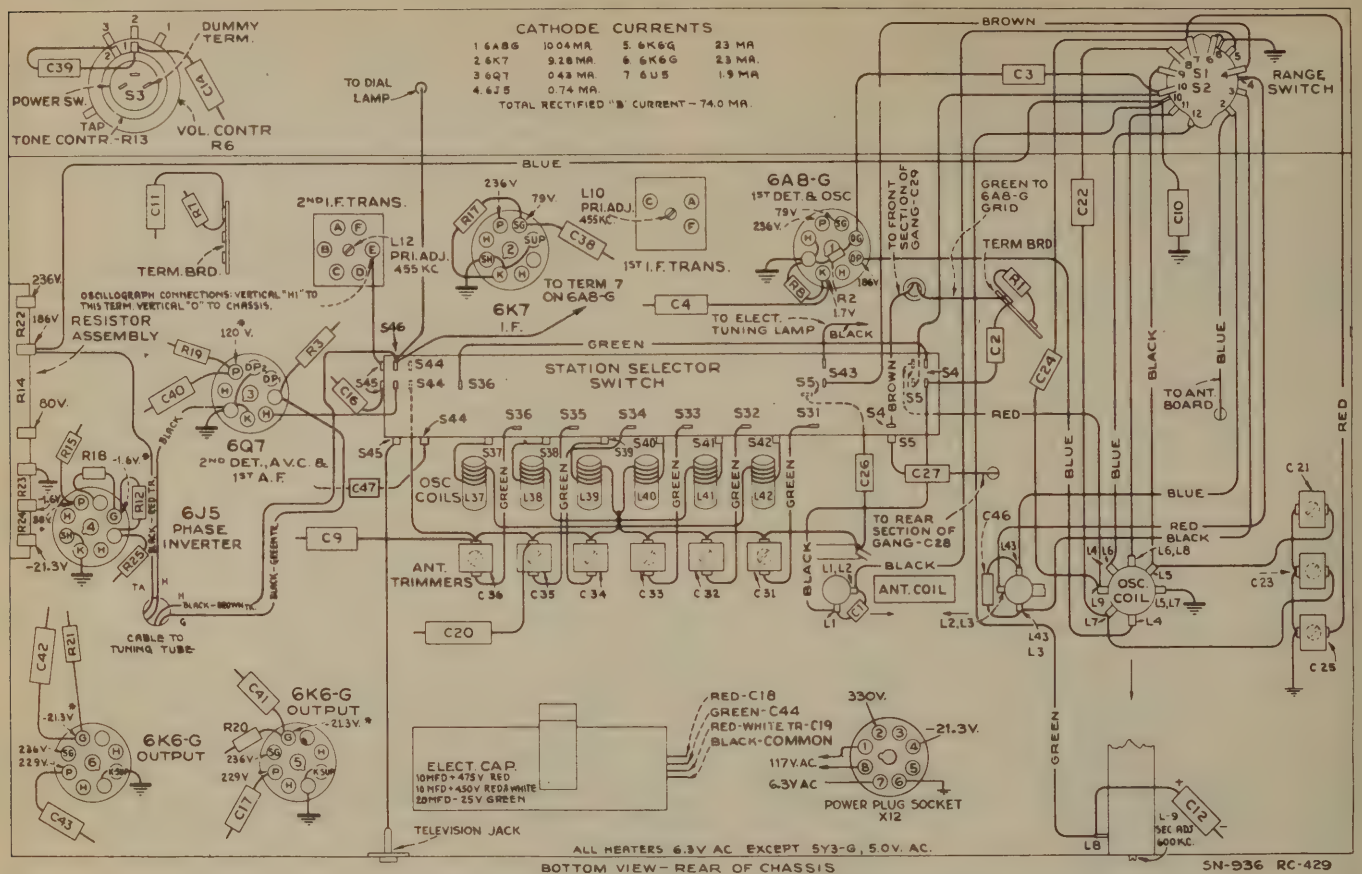
5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers. Use the "Magic Eye" to ensure sharp peaking.




*Schematic Circuit Diagram, Chassis No. RC-429*

**Precautionary Lead Dress:**

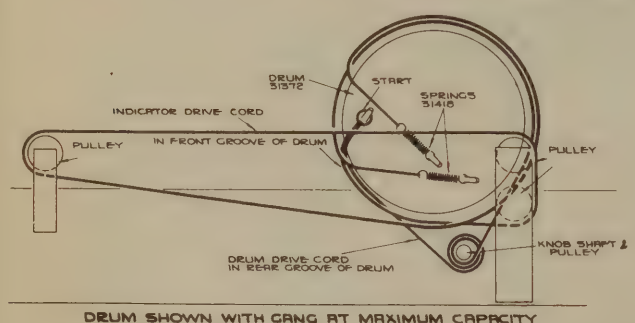
1. Electric tuning lamp leads to S43 must be dressed in front of the range switch.
2. Dress leads away from antenna coil.
3. Leads across back of chassis must be dressed away from television jack (X8).
4. C26 (750 mmfd.) on push-button switch assembly must be dressed carefully to prevent shorts.




*R-F Wiring Diagram, Chassis No. RC-429*

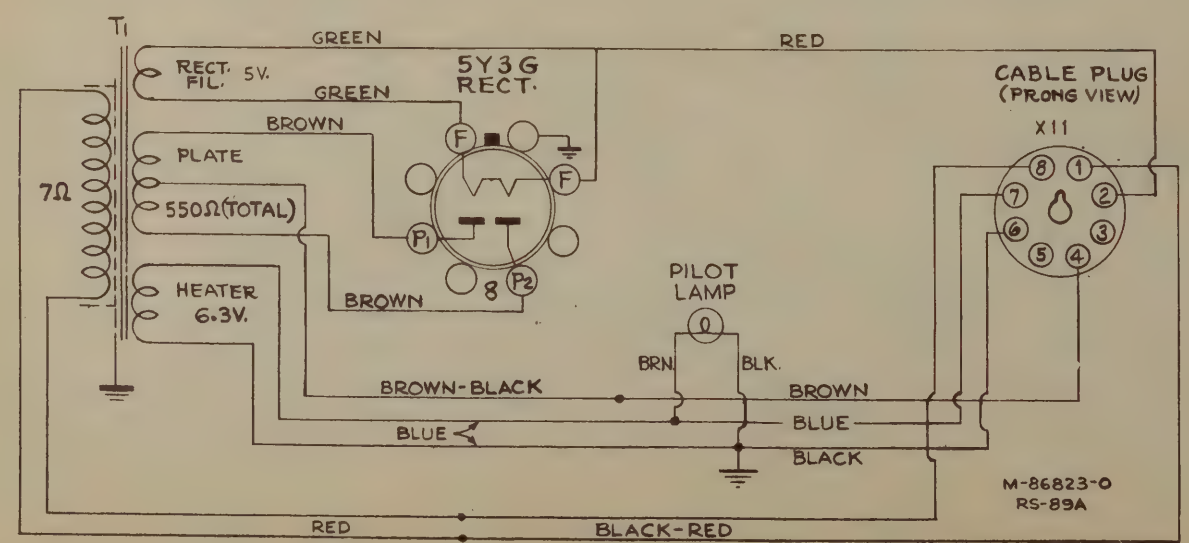
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.




DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

*At Left—Dial Mechanism*




*SPU Schematic Diagram, RS-89A*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | TELEVISION CHASSIS ASSEMBLIES |
| | TRK-5—KC-3A (60 cycles), KC-3C (50-60 cycles) |
| | TT-5—KC-3 (60 cycles), KC-3B (50-60 cycles) |
| 33387 | Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment. (Used with L11, L12, L14, L15) |
| 33835 | Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment. (Used with L13) |
| 31253 | Board—Antenna ground terminal board |
| 12884 | Capacitor—Plunger type air-trimmer—2½ to 20 mmfd. (Model TRK-5 only) (C6) |
| 12714 | Capacitor—Plunger type air-trimmer—2½ to 12 mmfd. (C6) (Model TT-5 only) |
| 33097 | Capacitor—4.7 mmfd. 500 volts (neg. temp. coeff.) (C20, C56, C57, C103) |
| 33476 | Capacitor—8.2 mmfd., 500 volts (neg. temp. coeff.) (C8) |
| 33100 | Capacitor—18 mmfd., 500 volts (neg. temp. coeff.) (C25) |
| 33101 | Capacitor—22 mmfd., 500 volts (neg. temp. coeff.) (C24, C52) |
| 33102 | Capacitor—47 mmfd., 500 volts (neg. temp. coeff.) (C53, C58) |
| 33103 | Capacitor—68 mmfd., 500 volts (neg. temp. coeff.) (C15, C23, C33, C38, C43) |
| 33477 | Capacitor—80.5 mmfd., 500 volts (neg. temp. coeff.) (C16) |
| 33104 | Capacitor—82 mmfd., 500 volts (neg. temp. coeff.) (C21, C22) |
| 33106 | Capacitor—115 mmfd. (C5) |
| 33107 | Capacitor—135 mmfd. (C4) |
| 12725 | Capacitor—150 mmfd. (C10) |
| 33108 | Capacitor—190 mmfd. (C3) |
| 33105 | Capacitor—215 mmfd., 500 volts (neg. temp. coeff.) (C31, C32) |
| 33760 | Capacitor—215 mmfd. (C101) |
| 33109 | Capacitor—320 mmfd. (C2) |
| 12536 | Capacitor—820 mmfd., 400 volts (C76) |
| 4881 | Capacitor—3,300 mmfd., 400 volts (C67) |
| 33806 | Capacitor—.0015 mfd., 1,500 volts (C78) |
| 33584 | Capacitor—.005 mfd., 1,200 volts (C11, C12, C13, C14, C18, C19, C26, C27, C28, C29, C30, C34, C35, C36, C39, C40, C41, C42, C49, C50, C51, C54, C55, C60, C65, C66, C79, C80, C92, C93, C94, C95, C102) |
| 33340 | Capacitor—.005 mfd., 3,000 volts (C81, C82) |
| 11315 | Capacitor—.015 mfd., 400 volts (C61) (Model TT-5 only) |
| 32787 | Capacitor—.05 mfd., 400 volts (C46, C64) |
| 4886 | Capacitor—.05 mfd., 400 volts (C62, C77) |
| 33341 | Capacitor—.05 mfd., 3,000 volts (C74, C75) |
| 32786 | Capacitor—.1 mfd., 300 volts (C45, C44) |
| 4839 | Capacitor—.1 mfd., 400 volts (C59, C91, C70, C73) |
| 33020 | Capacitor—.15 mfd., 2,500 volts (C87) (C100—KC-3B and KC-3C, 50 cycles, only) .05 mfd., 3,000 volts (C86) (C99—KC-3B and KC-3C, 50 cycles only) |
| 30965 | Capacitor—.25 mfd., 200 volts (C68, C71) |
| 12484 | Capacitor—.25 mfd., 350 volts (C37, C69, C88, C89, C90) |
| 33195 | Capacitor—10 mfd., 450 volts; 10 mfd., 450 volts; 20 mfd., 450 volts; 20 mfd., 25 volts (C63, C48, C47, C72) |
| 33190 | Capacitor—30 mfd., 450 volts; 30 mfd., 450 volts; 10 mfd., 150 volts (C83, C84, C85) |
| 34599 | Capacitor—30-30 mfd., 450 volts (C96, C97); 20 mfd., 350 volts (C98) (KC-3B and KC-3C, 50 cycle, only) |
| 33120 | Choke—Filter choke (L39) |
| 33243 | Coil—High frequency oscillator coil with core and stud (L11) |
| 33234 | Coil—1½-turn antenna coil, core, stud and capacitor assembly (C5, L9, L10) (green) |
| 33233 | Coil—2-turn antenna coil core, stud and capacitor assembly (C4, L7, L8) (yellow) |
| 33232 | Coil—3-turn antenna coil, core, stud and capacitor assembly (C3, L5, L6) (orange) |
| 33231 | Coil—5½-turn antenna coil, core, stud and capacitor assembly (C2, L1, L2) (red) |
| 33230 | Coil—4-turn antenna coil, core, stud and capacitor assembly (C101, L3, L4) (brown) |
| 33538 | Coil—Peaking coil and 10 meg., ½ watt resistor assembly (L33, R37) |
| 33539 | Coil—Peaking coil and 10 meg., resistor assembly (L31, R32) |
| 33540 | Coil—Peaking coil and 10 meg., ½ watt resistor assembly (L32, R35) |
| 33541 | Coil—Peaking coil and 1,500 ohm, ½ watt resistor assembly (L38, R59) |
| 33228 | Condenser—Adjustable oscillator tuning condenser mounted on band switch (C9) |
| 33385 | Connector—Insulated plate connector and lead (Use with 879 Rectifier Tube) |
| 33280 | Control—Audio volume control—1 meg. (Model TT-5 only) (R55) |
| 33274 | Control—Dual contrast and brightness control 10,000 ohm and 100,000 ohm (R14, R42) |
| 33275 | Control—Dual horizontal and vertical holding control—30,000 ohm and 1.2 meg. (R78, R65) |
| 33278 | Control—250,000 ohm "Width" control (R80) |
| 33276 | Control—400,000 ohm "focus" control (R97) |
| 33277 | Control—500,000 ohm "Vert. cent."—"Hor. cent." control (R99, R100) |
| 33279 | Control—2 megohm "Height" control (R70) |
| 33015 | Insulator—Stand-off porcelain insulator—less hardware |
| 4449 | Knob—"Focus" control knob |
| 33225 | Nut—Speed nut for use with high frequency coil assemblies (Pkg. of 10) |
| 14278 | Receptacle—Television sound output receptacle (X6) |
| 14074 | Resistor—82 ohms, ½ watt (R13, R44) |
| 14439 | Resistor—100 ohms, ½ watt (R103) |
| 14561 | Resistor—220 ohms, ½ watt (R27, R22) |
| 11352 | Resistor—910 ohms, ½ watt (R8) |
| 14720 | Resistor—1,000 ohms, ½ watt (R17, R25, R49) |
| 30152 | Resistor—1,000 ohms, 1 watt (R20, R24, R47) |
| 30731 | Resistor—1,200 ohms, ½ watt (R102) (KC-3B and KC-3C, 50 cycle, only) |
| 33318 | Resistor—1,200 ohms, 2 watts (R87) |
| 11351 | Resistor—1,300 ohms, ½ watt (R26) |
| 14499 | Resistor—1,500 ohms, ½ watt (R18) |
| 12194 | Resistor—1,800 ohms, ½ watt (R29) |
| 13486 | Resistor—2,200 ohms, 1 watt (R6) |
| 13031 | Resistor—3,300 ohms, 1/10 watt (R12 in early production) |
| 12312 | Resistor—3,300 ohms, ½ watt (R19) |
| 30150 | Resistor—3,300 ohms, 1 watt (R7, R72, R85) |
| 12955 | Resistor—3,900 ohms, ½ watt (R30) |
| 33566 | Resistor—3,900 ohms, 2 watts (R36) |
| 11650 | Resistor—4,700 ohms, 1/10 watt (R12 in later production) |
| 12265 | Resistor—6,800 ohms, ½ watt (R31, R9) |
| 14075 | Resistor—8,200 ohms, ½ watt (R63, R64) |
| 3155 | Resistor—9,100 ohms, 1 watt (R90) |
| 3078 | Resistor—10,000 ohms, ½ watt (R58, R62) |
| 8043 | Resistor—10,000 ohms, 2 watts (R57) |
| 30128 | Resistor—12,000 ohms, ½ watt (R61) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R51) |
| 14390 | Resistor—27,000 ohms, 1/10 watt (R10) |
| 12738 | Resistor—27,000 ohms, ½ watt (R54) (Model TT-5 only) |
| 35945 | Resistor—33,000 ohms, ½ watt (R5, R77) |
| 33639 | Resistor—33,000 ohms, 1 watt (R91) |
| 30683 | Resistor—33,000 ohms, 1 watt (R16) |
| 30434 | Resistor—39,000 ohms, 1 watt (R46) |
| 33182 | Resistor—43,000 ohms, 2 watts (R88, R89) |
| 12412 | Resistor—47,000 ohms, ½ watt (R93, R94) |
| 30495 | Resistor—47,000 ohms, 1 watt (R84, R86) |
| 33567 | Resistor—62,000 ohms, ½ watt (R28, R23) |
| 13715 | Resistor—68,000 ohms, ½ watt (R73) |
| 30679 | Resistor—68,000 ohms, 1 watt (R50) |
| 8064 | Resistor—82,000 ohms, ½ watt (R15, R45) |
| 11281 | Resistor—100,000 ohms, 1/10 watt (R21) |
| 14560 | Resistor—100,000 ohms, ½ watt (R11, R48, R52, R67, R79) |
| 30180 | Resistor—120,000 ohms, ½ watt (R4) |
| 30493 | Resistor—150,000 ohms, ½ watt (R43) |
| 12264 | Resistor—220,000 ohms, ½ watt (R68, R75, R76, R101) |
| 33501 | Resistor—330,000 ohms, 1 watt (R98) |
| 12285 | Resistor—470,000 ohms, ½ watt (R34) |
| 33502 | Resistor—470,000 ohms, 1 watt (R92) |
| 33593 | Resistor—560,000 ohms, 1 watt (R95) |
| 12413 | Resistor—680,000 ohms, ½ watt (R81) |
| 33598 | Resistor—680,000 ohms, 1 watt (R96) |
| 13730 | Resistor—1 meg. ½ watt (R1, R2, R3, R33, R53, R60, R56, R66) |
| 30208 | Resistor—1.2 meg., ½ watt (R39, R82, R83, R71, R41) |
| 12679 | Resistor—2.2 meg., ½ watt (R74) |
| 13167 | Resistor—3.9 meg., ½ watt (R38, R40) |
| 30931 | Resistor—4.7 meg., ½ watt (R69) |
| 33229 | Roller—Rubber friction roller for use on band switch for adjustment of oscillator trimmer |
| 3682 | Shield—Tube shield for "Hor. out." tube |
| 33211 | Socket—4-prong rectifier tube socket |
| 31251 | Socket—Octal base wafer type tube socket |
| 33001 | Socket—11-prong magnal Kinescope socket (X13) |
| 18008 | Socket—6J5 oscillator tube socket |
| 33226 | Switch—Band switch complete—less tuning condenser and friction roller |
| 33281 | Switch—Rotary type power switch (S5) (Model TT-5 only) |
| 33519 | Transformer—"1st Det. P1" I-F transformer (R8, C20, L17, L20, R10, C25) (red and brown) |
| 33520 | Transformer—"1st Det. P2" I-F transformer (L18, C21, C22, C23, L19, R12) (red and red) |

# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 33523 | Transformer—"1st pix P1" I-F transformer (L21, L22, R18, C31) (red and green) |
| 33524 | Transformer—"1st pix P2" I-F transformer (L23, L24, C33, R21) (red and blue) |
| 33526 | Transformer—"1st Sound" I-F transformer (L34, L35, C52, C53) (red and white) |
| 33522 | Transformer—"2nd Picture" I-F transformer (L25, L26, L27, C38, R26) (red and yellow) |
| 33527 | Transformer—"2nd Sound" I-F transformer (L36, L37, C56, C57, R51) (brown and orange) |
| 33525 | Transformer—"3rd Picture" I-F transformer (L28, L29, L30, C43, R29) (red and black) |
| 32899 | Transformer—Horizontal oscillation transformer (T3) |
| 33390 | Transformer—Plate and filament power transformer (T1) |
| 32898 | Transformer—Vertical oscillation transformer (T2) |
| | **3 BAND RADIO RECEIVER** |
| | **No. RC-429 Used with Model TRK-5** |
| 14517 | Board—Antenna—Ground terminal board |
| 30752 | Bracket—"Magic Eye" bracket |
| 30766 | Cap—Rubber cap for "Magic Eye" |
| 32486 | Capacitor—Antenna coil trimmer capacitor bank (C31, C32, C33, C34, C35, C36) |
| 31400 | Capacitor—Triple adjustable trimmer, two sections, 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25) |
| 12722 | Capacitor—18 mmfd. (C1) |
| 12723 | Capacitor—56 mmfd. (C3, C46) |
| 12720 | Capacitor—100 mmfd. (C39) |
| 14262 | Capacitor—109 mmfd. (C5, C6) |
| 12404 | Capacitor—120 mmfd. (C7, C8) |
| 14712 | Capacitor—180 mmfd. (C37) |
| 30232 | Capacitor—200 mmfd. (C2) |
| 32492 | Capacitor—530 mmfd. (C24) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 4881 | Capacitor—3,300 mmfd. (C22) |
| 31405 | Capacitor—6,000 mmfd. (C27) |
| 5107 | Capacitor—.0025 mfd., 700 volt (C16, C47) |
| 4838 | Capacitor—.005 mfd., 1,000 volt (C14 C17, C43) |
| 14393 | Capacitor—.01 mfd., 300 volt (C11) |
| 30882 | Capacitor—.05 mfd., 200 volt (C4, C9, C38) |
| 4858 | Capacitor—.01 mfd., 500 volt (C10, C40, C41, C42) |
| 30867 | Capacitor—0.5 mfd., 200 volt (C20) |
| 32145 | Capacitor—4 mfd., 450 volt (C12) |
| 32142 | Capacitor—10-10-20 mfd. (C18, C19, C44) |
| 31382 | Clip—Push button coil and core mounting clip |
| 32493 | Coil—Antenna coil assembly A, B, and C band (L1, L2, L3, L43) |
| 31385 | Coil—Push button oscillator coil, "A" band (L37, L38) (550-950KC) |
| 32457 | Coil—Push button oscillator coil, "A" band (L39, L40) (690-1225KC) |
| 31383 | Coil—Push button oscillator coil, "A" band (L41, L42) (890-1,500KC) |
| 31951 | Coil—Oscillator coil assembly for A, B, and C bands (L4, L5, L6, L7, L8, L9) |
| 31369 | Condenser—2 gang variable tuning condenser (C28, C29, C30) |
| 33497 | Control—Dual volume and tone control and switch (R6, R13, S3) |
| 32634 | Cord—Drive cord with clamping clips |
| 12800 | Core—Adjustable core and stud for oscillator coil |
| 31372 | Drum—Variable condenser drive cord drum and calibration dial |
| 11891 | Lamp—6.3 volt dial lamp (Mazda No. 44) |
| 32670 | Plate—Dial plate assembly |
| 12493 | Plug—Female speaker cable plug (X10) |
| 32552 | Pointer—Dial pointer |
| 31373 | Pulley—Pointer drive cord pulley |
| 14278 | Receptacle—Television sound input socket (X8) |
| 32143 | Resistor—Voltage divider comprising one 11,000 ohm, one 3,000 ohm, one 22 ohm and one 270 ohm section (R14, R22, R23, R24) |
| 30545 | Resistor—180 ohms, ½ watt (R8) |
| 5114 | Resistor—15,000 ohms, 1 watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2, R12) |
| 12266 | Resistor—39,000 ohms, ½ watt (R7) |
| 14560 | Resistor—100,000 ohms, ½ watt (R25) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R15 R19) |
| 13479 | Resistor—390,000 ohms, ½ watt (R20, R21) |
| 12486 | Resistor—560,000 ohms, ½ watt (R18) |
| 12013 | Resistor—1 meg., 1/10 watt (R16) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Retainer for stock No. 33500 tuning shaft |
| 14887 | Retainer—Retainer spring for stock No. 31373 pulley |
| 33500 | Shaft—Tuning shaft |
| 12581 | Shield—I-F transformer shield top |
| 31319 | Socket—8 prong socket for power supply plug (X12) |
| 31639 | Socket—Dial lamp socket, one wire non-insulated |
| 31384 | Socket—Dial lamp socket, two wire insulated |
| 13871 | Socket—Magic eye socket |
| 31251 | Socket—Octal type tube socket |
| 31418 | Spring—Indicator or drive cord tension spring |
| 33496 | Switch—Range switch (S1, S2) |
| 33498 | Switch—Station selector push button switch (S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S4, S5, S44, S45, S46) |
| 33499 | Switch—Television power switch and cover (S47) |
| 14376 | Transformer—1st I. F. transformer complete (L10, L11, C5, C6) |
| 14283 | Transformer—2nd I. F. transformer complete (L12, L13, C7, C8, C37, R4, R5) |
| | **POWER SUPPLY UNIT** |
| | **RS—89—A** |
| | **USED WITH RC—429** |
| 33606 | Plug—8 prong plug for power supply cable (X11) |
| 31251 | Socket—Octal base tube socket |
| 33224 | Transformer—Power transformer (T1) |
| | **SPEAKER ASSEMBLIES** |
| | **TRK-5** |
| | **RL-70—H-5** |
| 31825 | Cap—Speaker cone dust cap |
| 11469 | Coil—Hum bucking coil (L15) |
| 12012 | Coil—Speaker field coil (L16) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31539 | Plug—5 prong male speaker plug with link (X9) |
| 32146 | Speaker—Speaker complete |
| 14534 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| | **MODEL TRK-5** |
| | **MODEL TT-5** |
| 31397 | Button—Station selector push button (Model TRK-5 only) |
| 33597 | Cap—Pilot lamp "bull's eye" (Model TRK-5 only) |
| 33480 | Cable—38-inch shielded cable with two male plugs. Used between Radio and television chassis (Model TRK-5 only) (X5, X7) |
| 33479 | Cable—61-inch audio connection cable with two male connectors (Model TT-5 only) (X5, X7) |
| 33363 | Connector—2 prong female plug for interlock cable (X2) |
| 4573 | Connector—2 prong female connector used on television power cable (X4) |
| 31456 | Cover—Package of eight protective push button covers |
| 38305 | Decalcomania—"1-2-3-4-5" decal |
| 32673 | Dial—3-band glass dial scale |
| 33481 | Escutcheon—Dial escutcheon and scale (Model TRK-5 only) |
| 33518 | Glass—Safety protective glass for kinescope |
| 33506 | Knob—Band switch knob (Model TRK-5 only) |
| 33471 | Knob—"Brightness", "Vert. hold" or "volume" knob |
| 33470 | Knob—"Contrast", "Hor. hold", "Fine tuning" or "Tone control" knob |
| 33469 | Knob—"Off-on" control knob (Model TT-5 only) |
| 33505 | Knob—Radio tuning knob (Model TRK-5 only) |
| 33472 | Knob—"Station selector" control knob (white dot) |
| 33468 | Knob—"Volume" control knob |
| 11891 | Lamp—6.3 volt, Pilot indicator lamp (Mazda No. 44) |
| 31458 | Marker—"Dial tuning" marker tab (Model TRK-5 only) |
| 33596 | Marker—"Television" marker tab (Model TRK-5 only) |
| 31589 | Marker—Complete set of station call letter markers (TRK-5 only) |
| 33225 | Nut—"Speed nut" for high frequency coil assembly (Pkg. of 10) |
| 4577 | Plug—2 prong male connector used on television power cable (X3) |
| 33244 | Plug—2 prong male connector used on interlock cable (X1) |
| 12493 | Plug—5 prong female speaker connector plug (Model TRK-5 only) |
| 11210 | Screw—¼x20x1 in. chassis mounting screw, washer and lock washer (5 req'd) |
| 4560 | Screw—¼x20x1½ chassis mounting screw, washer and lock washer (6 req'd) |
| 14270 | Spring—Knob spring for stock No. 33468, 33471, 33472 and 33469 knobs |
| 30330 | Spring—Knob spring for stock No. 33470 knob |
| 4982 | Spring—Knob spring for stock No. 33505 knob |
| 33384 | Switch—Interlock switch and cover (S1, S2, TRK-5, S3, S4, TT-5) |

# MODEL 6Q1

**Chassis No. RC-441**

## Six-Tube, Three-Band, A-C, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22.0 mc (42.8-13.6 m) |
| INTERMEDIATE FREQUENCY | 455 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Detector, A.V.C., and A-F Amplifier |
| (5) RCA-6F6-G | Output |
| (6) RCA-5Y3-G | Rectifier |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

LOUDSPEAKER (RL-79A-2)

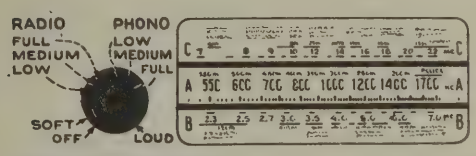
| | |
|---|---|
| Type | 6-inch electrodynamic |
| V.C. Impedance | 3.4 ohms at 400 cycles |

POWER SUPPLY RATINGS

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 75 watts |
| Rating B | 105-125 volts, 25-60 cycles, 75 watts |
| Rating C | 105-130, 140-160, 200-250 volts, 40-60 cycles, 75 watts |

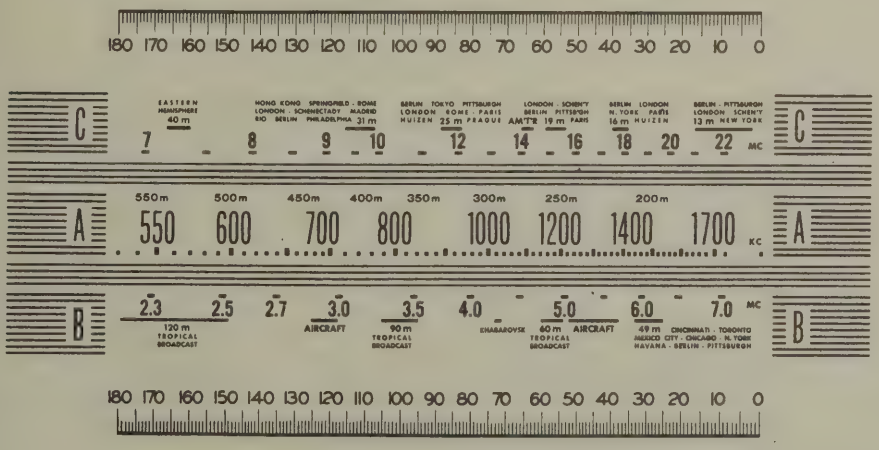
## Mechanical Specifications

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 12½ | 16⅝ | 10 15/16 |
| Chassis Base Dimensions (inches) | 2⅞ | 15⅝ | 6½ |
| Over-all Chassis Height (inches) | | | 7⅞ |
| Weight (Net lbs.) | | | 24 |
| Tuning Drive Ratio | | | 10 to 1; 50 to 1 |




POWER-VOLUME-TONE CONTROL AND PHONO-RADIO SWITCH

RANGE-TUNING CONTROL




### Calibration Scale

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

**Precautionary Lead Dress:**

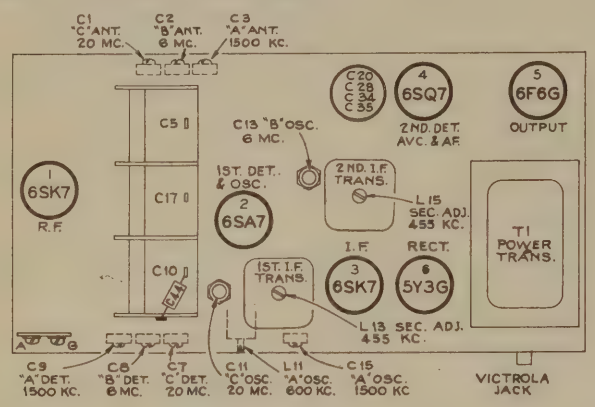
1. Dress yellow lead from antenna coil to first section of range switch away from adjoining wires.
2. Dress green lead from middle section of gang and green lead from 6SA7 to the rear section of the range switch away from chassis, ground leads, other wires and capacitors.
3. Dress brown lead from detector coil to rear section of the range switch away from the detector coil; loop brown lead toward rear apron.
4. Dress black lead from 2nd I. F. transformer "B" to 6SQ7 socket against chassis.
5. Twist power leads together, and dress away from 6SQ7 socket.
6. Dress blue lead from 6SK7 (R-F) socket to detector coil away from chassis, ground shields and other wires.
7. Dress black lead from antenna trimmer (C1) to antenna coil away from range switch link action.
8. Dress black speaker lead around output socket toward power transformer, against base.
9. Keep green lead of 6SK7 R-F grid circuit away from blue antenna lead.

# Alignment Procedure

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed.




**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

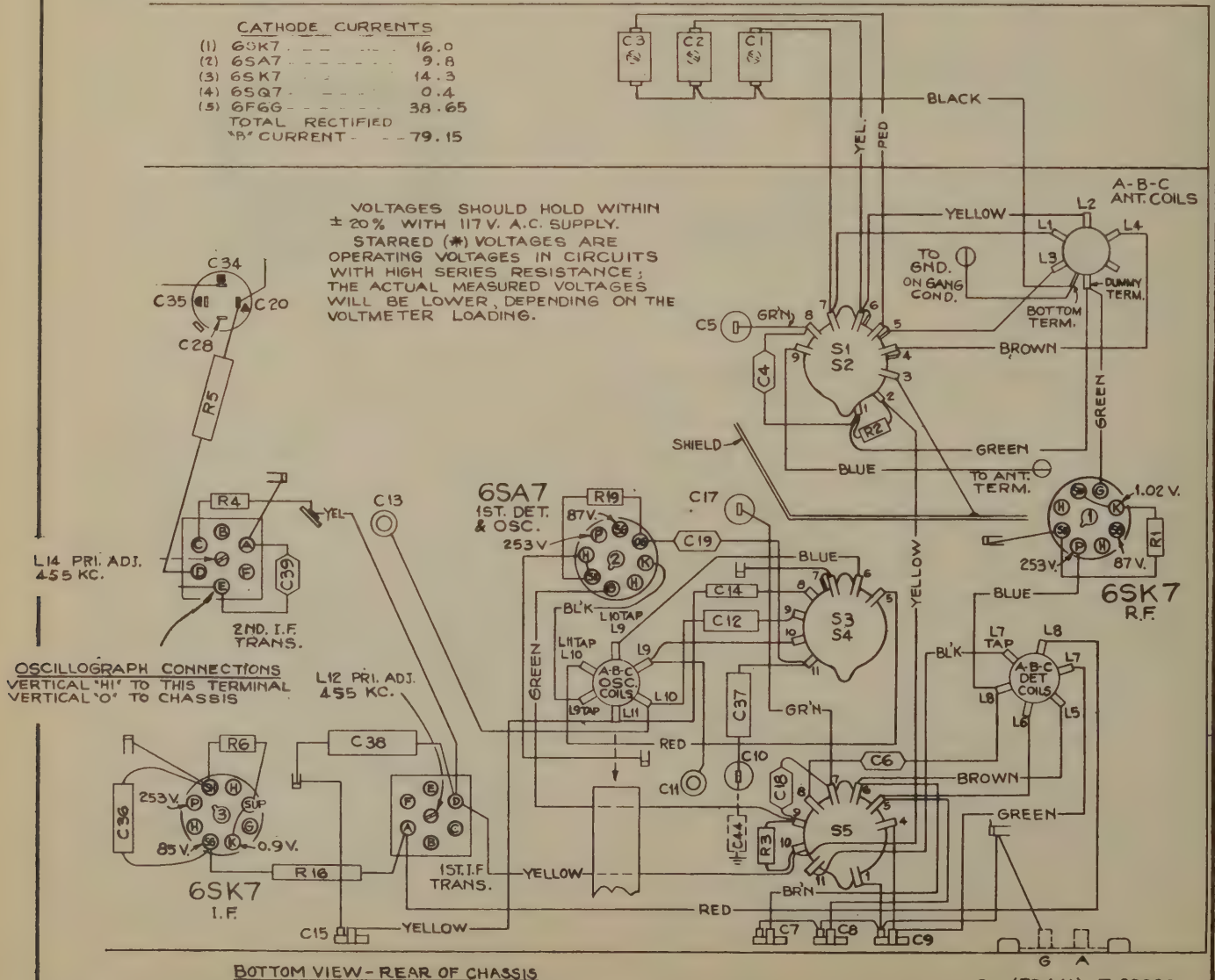
| Steps | Connect the high side of test-osc. to | Tune test-osc. to | Turn radio dial to | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6B8-I-F grid in series with .01 mfd. | 455 kc | Quiet point on "C" Band | L14 and L15 (2nd I-F Trans.) |
| 2 | Stator of middle section of gang [C17] in series with .01 mfd. | | | L12 and L13 (1st I-F Trans.) |
| 3 | Ant. terminal in series with 200 mmfd. | 600 kc | 600 kc (148°) "A" Band | L11 (osc.) Rock gang |
| 4 | | 1,500 kc | 1,500 kc (28°) "A" Band | C15 (osc.)* C9 (det.)† C3 (ant.) |
| 5 | Ant. terminal in series with 300 ohms | 6.1 mc | 6.1 mc (29°) "B" Band | C13 (osc.)* C8 (det.)† C2 (ant.) |
| 6 | | 20 mc | 20 mc (23°) "C" Band | C11 (osc.)* C7 (det.)† C2 (ant.) |

* Use minimum capacity peak if two peaks can be obtained.
† Use maximum capacity peak if two peaks can be obtained.
NOTE: Oscillator tracks 455 kc above signal on all bands.

CATHODE CURRENTS

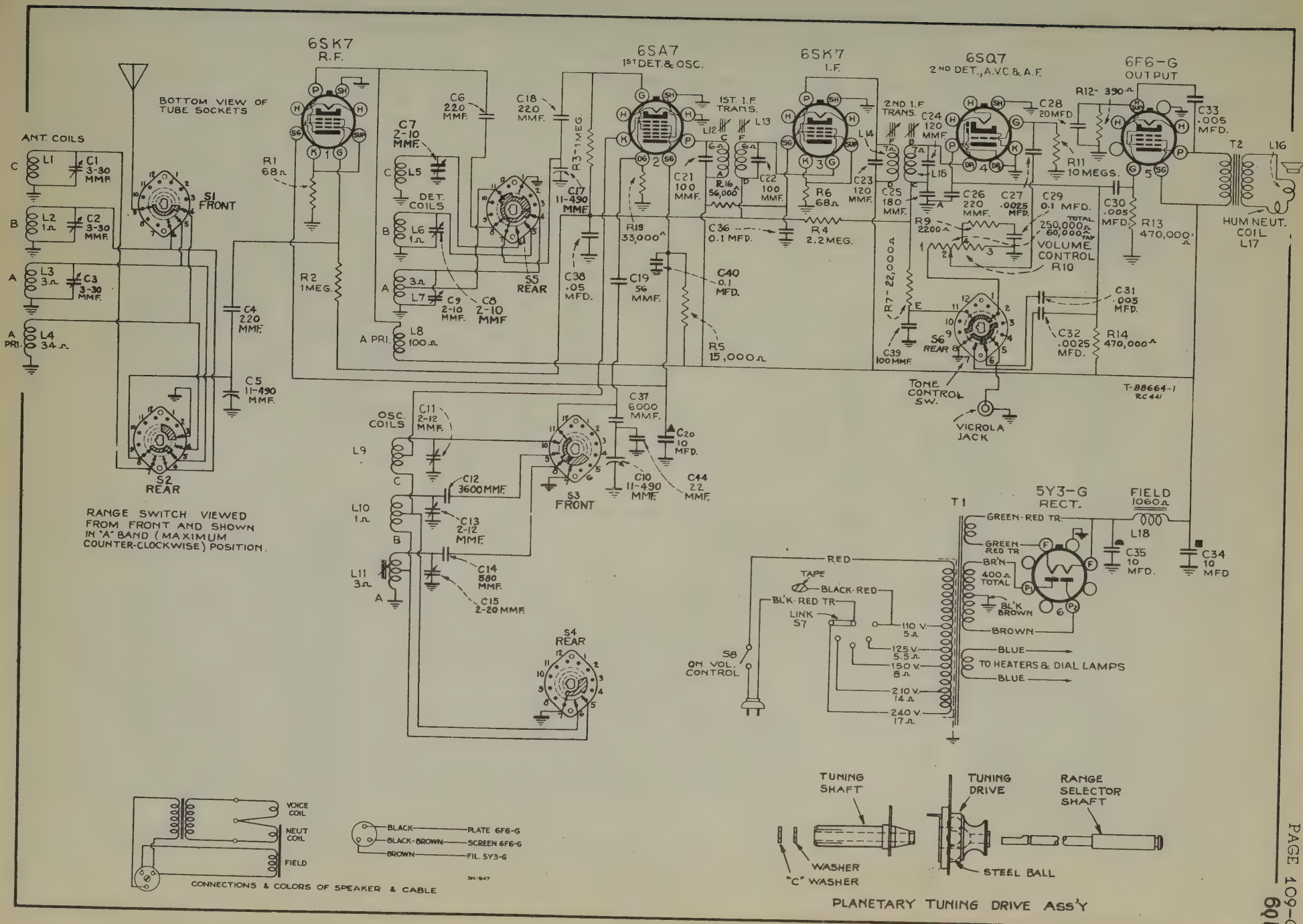
| | | |
|---|---|---|
| (1) | 6SK7 | 16.0 |
| (2) | 6SA7 | 9.8 |
| (3) | 6SK7 | 14.3 |
| (4) | 6SQ7 | 0.4 |
| (5) | 6F6G | 38.65 |
| | TOTAL RECTIFIED "B" CURRENT | 79.15 |

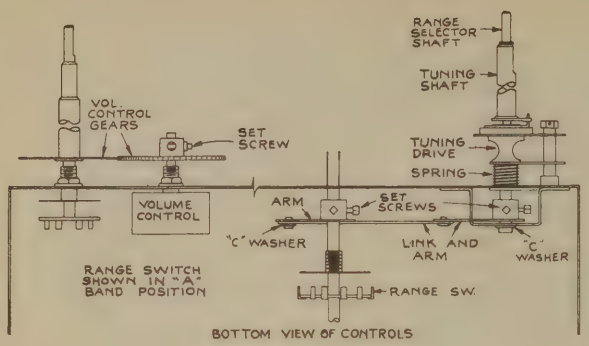
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY.
STARRED (*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.



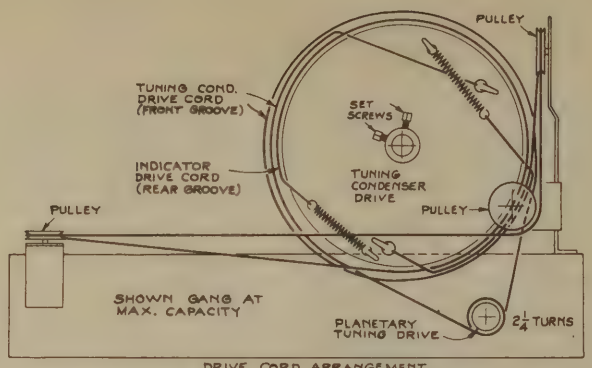

BOTTOM VIEW - REAR OF CHASSIS
R-F WIRNG AND SOCKET VOLTAGES

6Q1 (RC441) T-88838


6SK7
R.F.
6SA7
1ST DET. & OSC.
6SK7
I.F.
6SQ7
2ND DET., A.V.C. & A.F.
6F6-G
OUTPUT
5Y3-G
RECT.
FIELD
1060Ω
BOTTOM VIEW OF TUBE SOCKETS
ANT. COILS
L1
C1 3-30 MMF.
L2 1Ω
C2 3-30 MMF.
L3 3Ω
C3 3-30 MMF.
L4 34Ω
A PRI.
S1 FRONT
S2 REAR
R1 68Ω
R2 1MEG.
C4 220 MMF.
C5 11-490 MMF.
C6 220 MMF.
C7 2-10 MMF.
L5
DET. COILS
L6 1Ω
L7
C8 2-10 MMF.
C9 2-10 MMF.
L8 100Ω
S5 REAR
C18 220 MMF.
R3 1 MEG.
C17 11-490 MMF.
C38 .05 MFD.
R19 33,000Ω
C19 56 MMF.
C40 0.1 MFD.
R5 15,000Ω
C21 100 MMF.
1ST I.F. TRANS.
L12
L13
R16 56,000Ω
C22 100 MMF.
C36 0.1 MFD.
R4 2.2 MEG.
R6 68Ω
C23 120 MMF.
2ND I.F. TRANS.
L14
L15
C24 120 MMF.
C25 180 MMF.
C26 220 MMF.
C27 .0025 MFD.
C28 20 MFD.
R11 10 MEGS.
R12 390Ω
C29 0.1 MFD.
R9 2200Ω
TOTAL 250,000Ω
60,000Ω TAP
VOLUME CONTROL R10
R7 22,000Ω
C30 .005 MFD.
R13 470,000Ω
C33 .005 MFD.
T2
L16
HUM NEUT. COIL L17
C31 .005 MFD.
C32 .0025 MFD.
R14 470,000Ω
S6 REAR
C39 100 MMF.
TONE CONTROL SW.
VICROLA JACK
T-88664-1
RC441
OSC. COILS
C11 2-12 MMF.
L9
C12 3600 MMF.
L10 1Ω
C13 2-12 MMF.
L11 3Ω
C14 580 MMF.
C15 2-20 MMF.
S3 FRONT
C37 6000 MMF.
C20 10 MFD.
C10 11-490 MMF.
C44 22 MMF.
S4 REAR
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAXIMUM COUNTER-CLOCKWISE) POSITION.
T1
GREEN-RED TR.
GREEN RED TR
BR'N 400Ω TOTAL
BL'K BROWN
BROWN
BLUE
TO HEATERS & DIAL LAMPS
BLUE
L18
C34 10 MFD
C35 10 MFD.
RED
TAPE
BLACK-RED
BL'K-RED TR
LINK S7
110 V. 5Ω
125 V. 5.5Ω
150 V. 8Ω
210 V. 14Ω
240 V. 17Ω
S8 ON VOL. CONTROL
VOICE COIL
NEUT COIL
FIELD
CONNECTIONS & COLORS OF SPEAKER & CABLE
BLACK — PLATE 6F6-G
BLACK-BROWN — SCREEN 6F6-G
BROWN — FIL. 5Y3-G
SN-847
TUNING SHAFT
TUNING DRIVE
RANGE SELECTOR SHAFT
WASHER
"C" WASHER
STEEL BALL
PLANETARY TUNING DRIVE ASS'Y



BOTTOM VIEW OF CONTROLS



DRIVE CORD ARRANGEMENT

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-441)** |
| 34502 | Arm—Operating arm between knob shaft and range switch shaft |
| 10194 | Ball—Steel Ball |
| 31767 | Board—Antenna-Ground board |
| 33819 | Capacitor—Trimmer capacitor—3 sections of 2-10 mmfd. each (C7, C8, C9) |
| 12714 | Capacitor—Adjustable trimmer—2-12 mmfd. (C11, C13) |
| 33817 | Capacitor—Trimmer capacitor—1 section of 2-20 mmfd. (C15) |
| 33820 | Capacitor—Trimmer capacitor—3 sections of 3-30 mmfd. each (C1, C2, C3) |
| 31868 | Capacitor—22 mmfd. (C44) |
| 12723 | Capacitor—56 mmfd. (C19) |
| 12720 | Capacitor—100 mmfd. (C39) |
| 30904 | Capacitor—100 mmfd. (C21, C22) |
| 12404 | Capacitor—120 mmfd. (C23, C24) |
| 14712 | Capacitor—180 mmfd. (C25) |
| 12694 | Capacitor—220 mmfd. (C4, C6, C18, C26) |
| 33235 | Capacitor—580 mmfd. (C14) |
| 12811 | Capacitor—3,600 mmfd. (C12) |
| 31405 | Capacitor—6,000 mmfd. (C37) |
| 5107 | Capacitor—.0025 mfd. (C27, C32) |
| 33584 | Capacitor—.005 mfd. (C30, C31, C33) |
| 32787 | Capacitor—.05 mfd. (C38) |
| 4839 | Capacitor—0.1 mfd. (C29, C36, C40) |
| 33014 | Capacitor—Comprising 3 sections of 10 mfd. and 1 section of 20 mfd. (C20, C28, C34, C35) |
| 33762 | Coil—Antenna coil A-B-C-Band (L1, L2, L3, L4) |
| 33763 | Coil—Detector coil A-B-C-Band (L5, L6, L7, L8) |
| 32824 | Coil—Oscillator coil A-B-C-Band (L9, L10, L11) |
| 33756 | Condenser—Variable tuning condenser (C5, C10, C17) |
| 33815 | Control—Tone control (S6) |
| 33814 | Control—Volume control and power switch (R10, S8) |
| 32635 | Cord—Indicator drive cord |
| 32713 | Core—Core and stud for oscillator coils |
| 33770 | Drive—Planetary tuning drive less balls, shafts and shaft retainer |
| 33773 | Drum—Variable tuning condenser drum and hub |
| 33185 | Gear—Gear and hub for volume control and switch |
| 33767 | Link—Operating link between knob shaft and range switch |
| 12471 | Plate—Cushion socket mounting plate assembly less socket |
| 14281 | Resistor—68 ohms, ½ watt (R1, R6) |
| 31388 | Resistor—390 ohms, 1 watt (R12) |
| 13716 | Resistor—2,200 ohms, ½ watt (R9) |
| 33489 | Resistor—15,000 ohms, 2½ watt (R5) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R19) |
| 17440 | Resistor—56,000 ohms, 1 watt (R16) |
| 12285 | Resistor—470,000 ohms, ½ watt (R13, R14) |
| 13730 | Resistor—1 meg., ½ watt (R2, R3) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R11) |
| 34037 | Retainer—Retaining washer for range switch shaft |
| 33772 | Shaft—Range switch shaft |
| 33768 | Shaft—Shaft and gear for tone control |
| 33771 | Shaft—Tuning shaft |

| STOCK No. | DESCRIPTION |
|---|---|
| 31364 | Socket—Lamp socket |
| 14278 | Socket—Single contact socket and plate for phonograph input |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Condenser drive cord spring |
| 13638 | Spring—Indicator drive cord spring |
| 33769 | Spring—Planetary tuning drive spring |
| 33757 | Switch—Range switch (S1, S2, S3, S4, S5) |
| 33428 | Transformer—First i-f transformer (L12, L13, C21, C22) |
| 14308 | Transformer—Second i-f transformer (L14, L15, C23, C24, C25, R7) |
| 31734 | Transformer—Power transformer 110 volts, 25 cycle (T1) |
| 31733 | Transformer—Power transformer 110 volts, 60 cycle (T1) |
| 31735 | Transformer—Power transformer 105/130 140/160 200/250 volts, 50/60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (RL-79A-2)** |
| 32907 | Cap—Dust cap |
| 33966 | Coil—Field coil (L18) |
| 32906 | Coil—Neutralizing coil (L17) |
| 5118 | Plug—3 prong male speaker plug |
| 32905 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33798 | Dial—Dial scale |
| 33797 | Frame—Dial frame assembly complete less dial scale |
| 33774 | Mounting—Speaker mounting hardware |
| 4982 | Spring—Retaining spring for knob Stock No. 34136 |
| 14270 | Spring—Retaining spring for knob Stock No. 34570 |
| 34138 | Spring—Retaining spring for knob Stock No. 34571 |

**Additional Replacement Parts:**

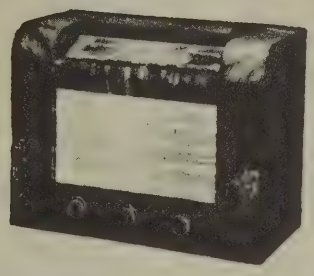
| Stock No. | |
|---|---|
| 34662 | Cord—Condenser drive cord |
| 11761 | Lamp—Mazda No. 51 |
| 35441 | Cone—Cone complete with voice coil, suspension, and dust cap |
| 34571 | Knob—Range switch knob (brown) |
| 34570 | Knob—Tone control knob (brown) |
| 34136 | Knob—Tuning or volume control (brown) |
| 34984 | Knob—Range switch knob (black) |
| 34983 | Knob—Tone control knob (black) |
| 34982 | Knob—Tuning or volume control (black) |

# MODELS 6Q4, 7Q4 and 7QK4

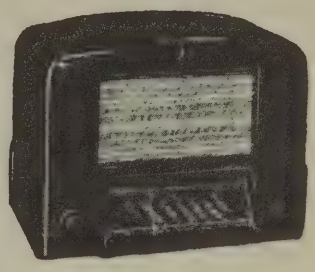
**Chassis No. RC-441-A RC-478A RC-478B**

## Six and Seven-Tube, Four-Band, A-C, Superheterodyne Receivers

MODEL 7QK4



MODEL 7Q4



MODEL 6Q4

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave ("X" Band) | 145-405 kc (2,069-740 m) |
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22.0 mc (42.8-13.6 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Detector, A.V.C., and A-F Amplifier |
| (5) RCA-6F6-G (7Q4) / RCA-6F6 (7QK4) | Output |
| (6) RCA-5Y3-G | Rectifier |
| (7) RCA-6U5/6G5 | Tuning Indicator |

LOUDSPEAKERS

| | |
|---|---|
| 7Q4 (RL-63K-2) | 8-inch electrodynamic |
| 7QK4 (RL-70J-4) | 12-inch electrodynamic |
| V. C. Impedance | 2.2 ohms at 400 cycles |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

LOUDSPEAKER (RL-79A-2) **6Q4**

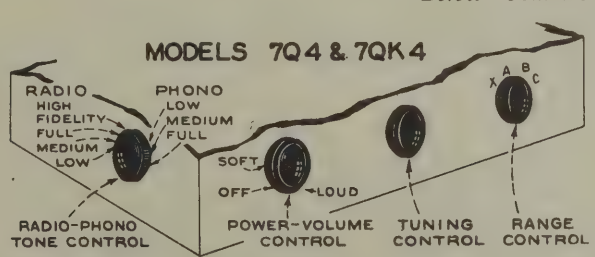
| | |
|---|---|
| Type | 6-inch electrodynamic |
| V.C. Impedance | 3.4 ohms at 400 cycles |

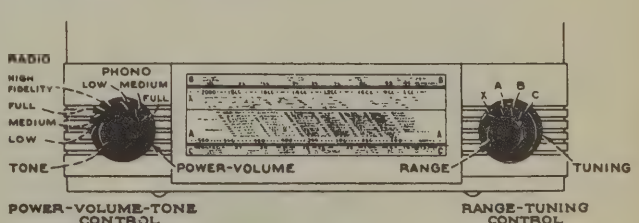
POWER SUPPLY RATINGS

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 75 watts |
| Rating B | 105-125 volts, 25-60 cycles, 75 watts |
| Rating C | 105-130, 140-160, 200-250 volts, 40-60 cycles, 75 watts |

Models 7Q4 and 7QK4 are similar to Model 6Q4 except for the addition of a tuning indicator (RCA-6U5/6G5). The 7QK4 chassis uses an RCA-6F6 output tube, whereas the 7Q4 uses an RCA-6F6-G output tube.

*Below—Controls*




MODEL 6Q4

**Precautionary Lead Dress:**

1. Dress black lead from L11 to C20 against terminals 6 and 7 of S6.
2. Dress the green lead from the middle section of the gang away from any other leads, parts, or chassis.
3. Dress the black diode lead running between the 6SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.
4. Twist the power leads together and dress them away from the 6SQ7 socket.
5. Dress the brown lead from terminal E on the 2nd I-F transformer to terminal 11 on S8 close to chassis.
6. Dress the black lead from trimmer (C1) to antenna coil away from the range switch link section.
7. Dress black speaker lead around the output socket toward the power transformer.
8. Keep green lead of 6SK7 R-F grid circuit away from blue antenna lead.

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

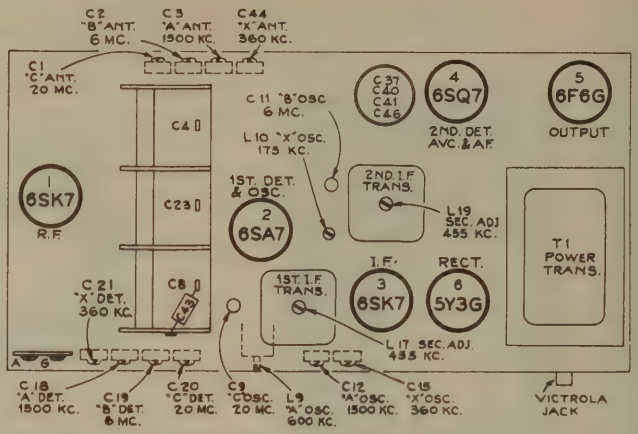
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed.


C2 "B" ANT. 6 MC.
C3 "A" ANT. 1500 KC.
C44 "X" ANT. 360 KC.
C1 "C" ANT. 20 MC.
C4
C23
C8
C21 "X" DET. 360 KC.
1 6SK7 R.F
C11 "B" OSC 6 MC.
L10 "X" OSC. 175 KC.
2 6SA7 1ST. DET. & OSC.
C37 C40 C41 C46
4 6SQ7 2ND. DET. AVC. & A.F.
5 6F6G OUTPUT
2ND. I.F. TRANS.
L19 SEC. ADJ 455 KC.
T1 POWER TRANS.
1ST. I.F. TRANS.
3 6SK7 I.F.
6 5Y3G RECT.
L17 SEC. ADJ. 455 KC.
C18 "A" DET. 1500 KC.
C19 "B" DET. 6 MC.
C20 "C" DET. 20 MC.
C9 "C" OSC. 20 MC.
L9 "A" OSC. 600 KC.
C12 "A" OSC. 1500 KC.
C15 "X" OSC. 360 KC.
VICTROLA JACK

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Turn tone control to 3rd position (sharp) from maximum counter-clockwise. | | | |
| 2 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" Band Quiet point between 550-750 kc | L18 and L19 (2nd I-F trans.) |
| 3 | 6SA7 grid in series with .01 mfd. | | | L16 and L17 (1st I-F trans.) |
| 4 | Turn tone control to 4th position (broad) from maximum counter-clockwise and check I-F response which should be a slightly double-peaked curve. Leave tone control in 3rd position (sharp) for the following steps. | | 6Q4 | 7Q4 |
| 5 | Ant. terminal in series with 200 mmfd. | 360 kc | 360 kc (31.5°) "X" Band | 360 kc (149°) C15 (osc.)† C21 (det.) C44 (ant.) |
| 6 | | 175 kc | 175 kc (127.2°) "X" Band | 175 kc (53°) L10 (osc.) Rock gang |
| 7 | | 1,500 kc | 1,500 kc (28°) "A" Band | 1,500 kc (152°) C12 (osc.)†† C18 (det.) C3 (ant.) |
| 8 | | 600 kc | 600 kc (148°) "A" Band | 600 kc (32°) L9 (osc.) Rock gang |
| 9 | Repeat steps 5, 6, 7. and 8. | | | |
| 10 | Ant. terminal in series with 300 ohms | 6 mc | 6 mc (30°) "B" Band | 6 mc (149°) C11 (osc.)* C19 (det.) C2 (ant.) |
| 11 | | 20 mc | 20 mc (23°) "C" Band | 20 mc (157°) C9 (osc.)** C20 (det.) C1 (ant.) |

* Use **minimum** capacity peak if two can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

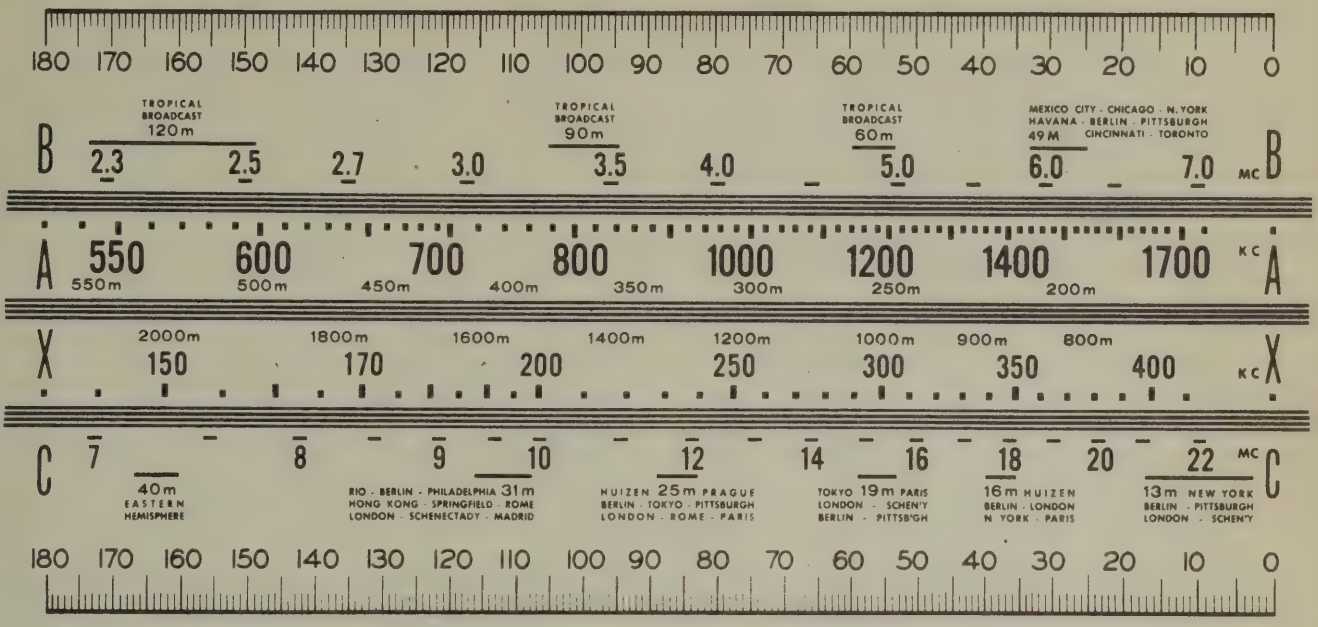
** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to the correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

† Preset L10 core approximately ½-inch out before adjusting C15.

†† Preset L9 core screw flush with apron before adjusting C12.

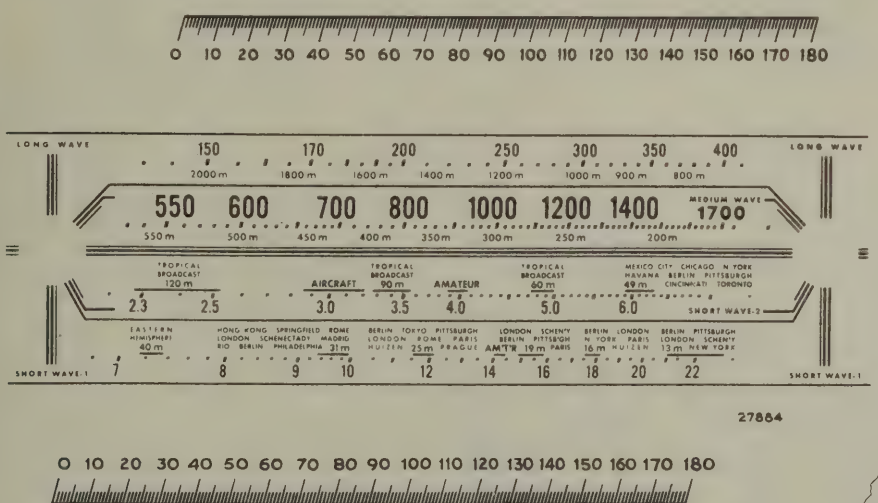
**Note.**—Oscillator tracks **above** signal on all bands.

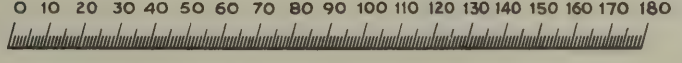
# Calibration Scale


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
B
TROPICAL BROADCAST 120m
TROPICAL BROADCAST 90m
TROPICAL BROADCAST 60m
MEXICO CITY - CHICAGO - N. YORK HAVANA - BERLIN - PITTSBURGH 49M CINCINNATI - TORONTO
2.3 2.5 2.7 3.0 3.5 4.0 5.0 6.0 7.0 MC
A
550 550m 600 500m 700 450m 800 400m 1000 350m 1200 300m 1400 250m 1700 200m KC
X
2000m 1800m 1600m 1400m 1200m 1000m 900m 800m
150 170 200 250 300 350 400 KC
C
7 8 9 10 12 14 16 18 20 22 MC
40m EASTERN HEMISPHERE
RIO - BERLIN - PHILADELPHIA 31m HONG KONG - SPRINGFIELD - ROME LONDON - SCHENECTADY - MADRID
HUIZEN 25m PRAGUE BERLIN - TOKYO - PITTSBURGH LONDON - ROME - PARIS
TOKYO 19m PARIS LONDON - SCHEN'Y BERLIN - PITTSB'GH
16m HUIZEN BERLIN - LONDON N YORK - PARIS
13m NEW YORK BERLIN - PITTSBURGH LONDON - SCHEN'Y
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales* **6Q4**

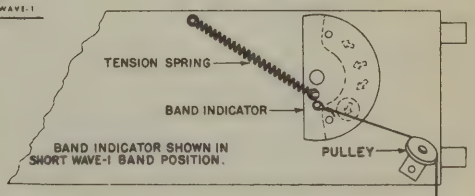
The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 28° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

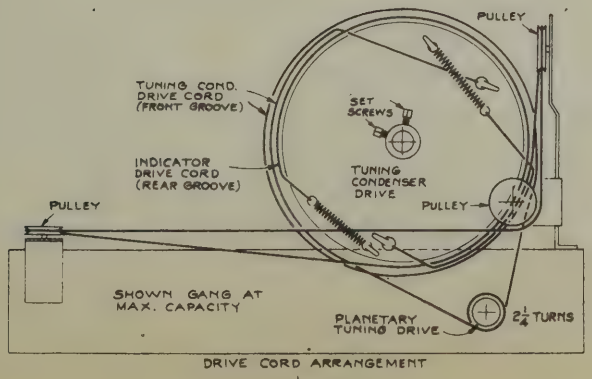

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
LONG WAVE
150 2000m 170 1800m 200 1600m 250 1400m 300 1200m 350 1000m 400 900m 800m
550 550m 600 500m 700 450m 800 400m 1000 350m 1200 300m 1400 250m 1700 200m
MEDIUM WAVE
TROPICAL BROADCAST 120m
AIRCRAFT
TROPICAL BROADCAST 90m
AMATEUR
TROPICAL BROADCAST 60m
MEXICO CITY CHICAGO N YORK HAVANA BERLIN PITTSBURGH 49m CINCINNATI TORONTO
2.3 2.5 3.0 3.5 4.0 5.0 6.0
SHORT WAVE-2
EASTERN HEMISPHERE 40m
HONG KONG SPRINGFIELD ROME LONDON SCHENECTADY MADRID RIO BERLIN PHILADELPHIA 31m
BERLIN TOKYO PITTSBURGH LONDON ROME PARIS HUIZEN 25m PRAGUE
LONDON SCHEN'Y BERLIN PITTSB'GH AM'TR 19m PARIS
BERLIN LONDON N YORK PARIS 16m HUIZEN
BERLIN PITTSBURGH LONDON SCHEN'Y 13m NEW YORK
7 8 9 10 12 14 16 18 20 22
SHORT WAVE-1
27864




## 7Q4 7QK4 Calibration Scale

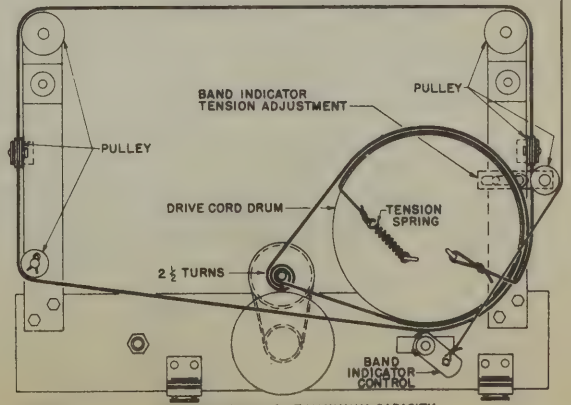
| Frequency | Calibration Degrees |
|---|---|
| 175 kc | 52.8 |
| 360 kc | 148.5 |
| 600 kc | 32.0 |
| 1,500 kc | 152.0 |
| 6.0 mc | 150.0 |
| 20.0 mc | 157.0 |




DRIVE CORD ARRANGEMENT

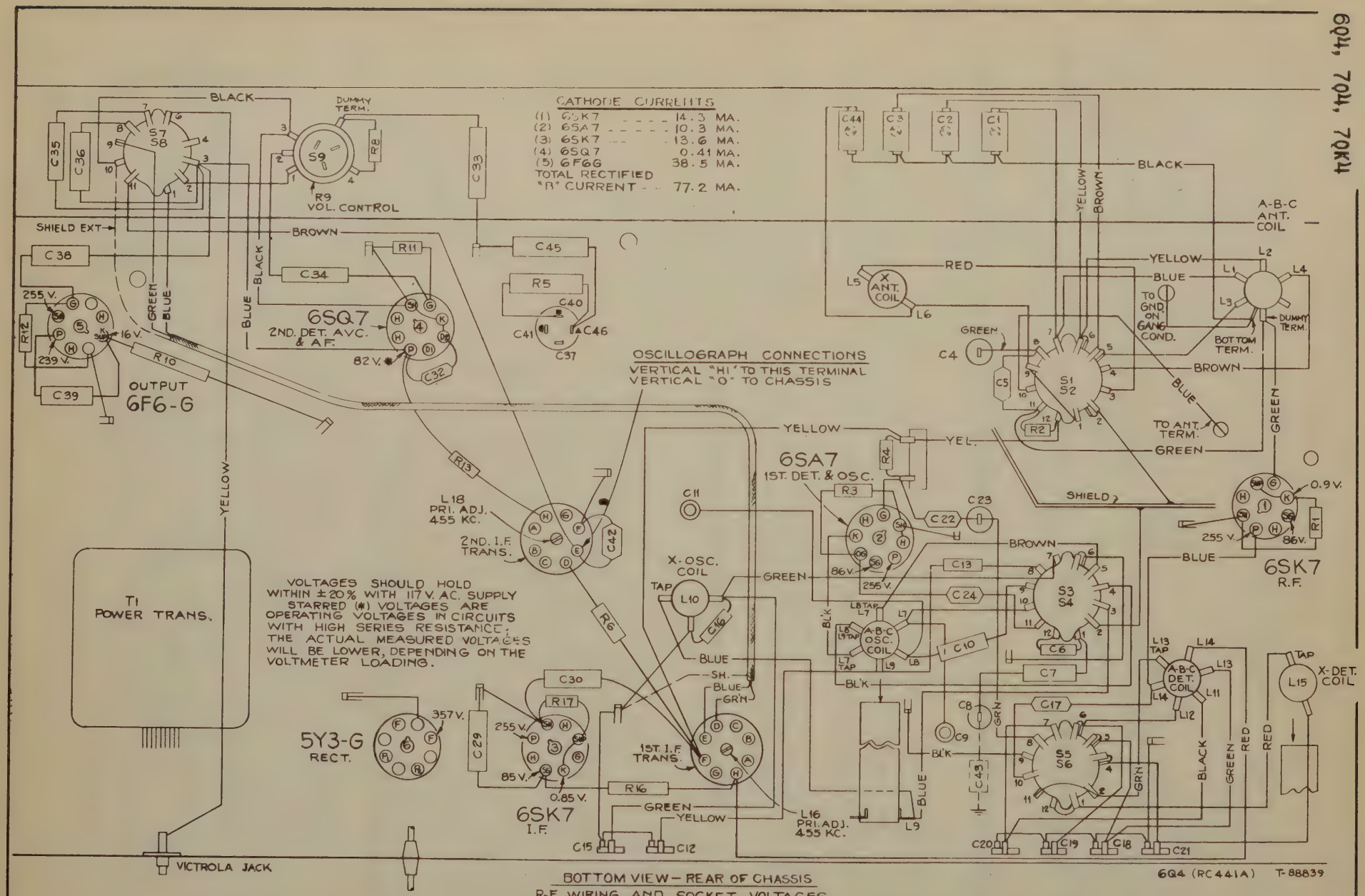
**6Q4**

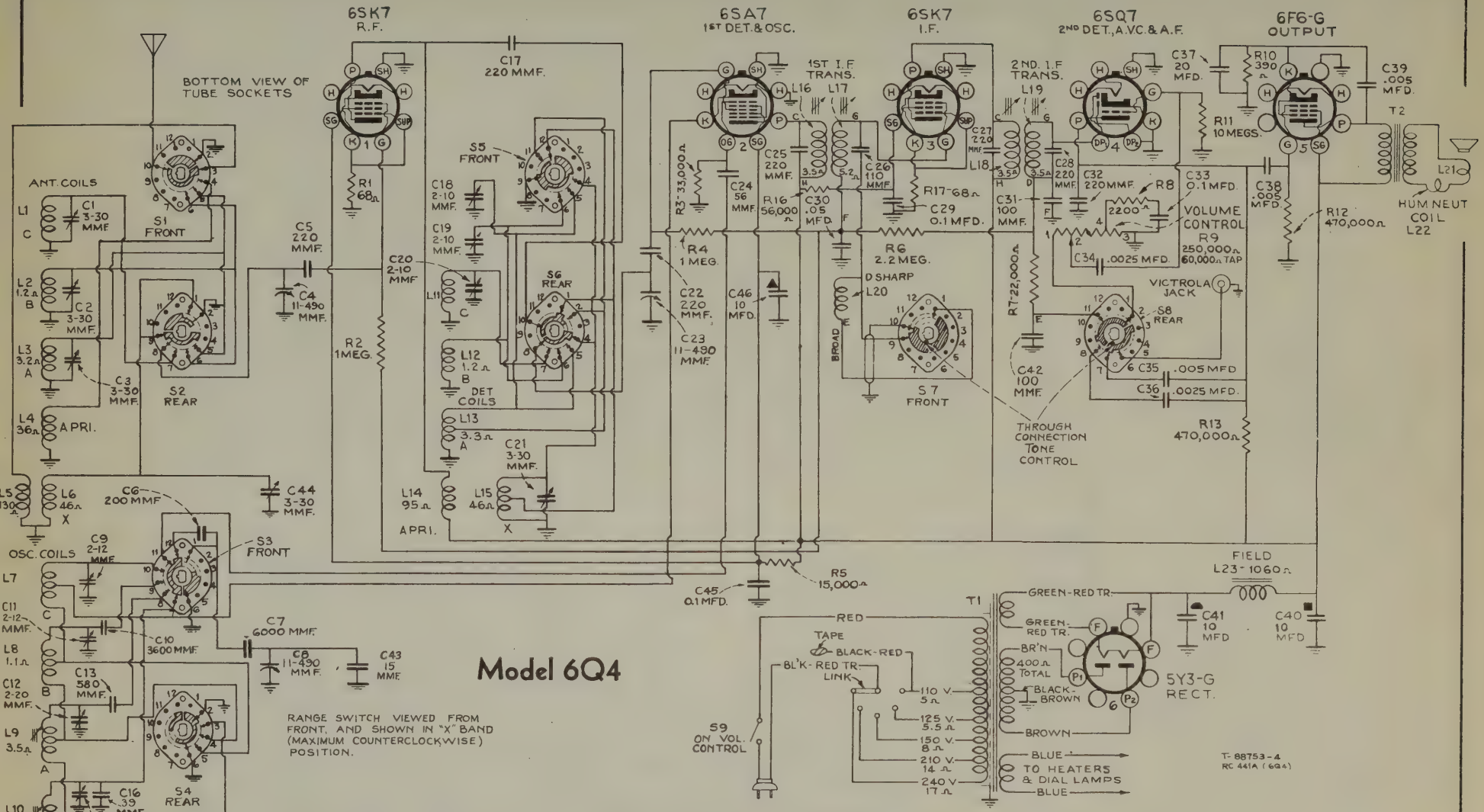



SHOWN WITH GANG AT MAXIMUM CAPACITY.

**7Q4 7QK4**

# 604, 704, 704A


CATHODE CURRENTS
(1) 6SK7 — 14.3 MA.
(2) 6SA7 — 10.3 MA.
(3) 6SK7 — 13.6 MA.
(4) 6SQ7 — 0.41 MA.
(5) 6F6G — 38.5 MA.
TOTAL RECTIFIED "B" CURRENT — 77.2 MA.
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY
STARRED (*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
T1 POWER TRANS.
OUTPUT 6F6-G
6SQ7 2ND. DET. AVC. & A.F.
5Y3-G RECT.
6SA7 1ST. DET. & OSC.
6SK7 I.F.
6SK7 R.F.
2ND. I.F. TRANS.
1ST. I.F. TRANS.
X-OSC. COIL
A-B-C OSC. COIL
A-B-C DET. COIL
A-B-C ANT. COIL
X ANT. COIL
X-DET. COIL
R9 VOL. CONTROL
L16 PRI. ADJ. 455 KC.
L18 PRI. ADJ. 455 KC.
VICTROLA JACK
BOTTOM VIEW — REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES
6Q4 (RC441A) T-88839



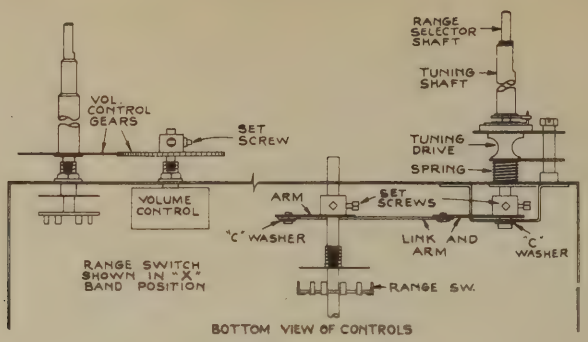

Models 7Q4 and 7QK4 are similar to Model 6Q4 except for the addition of a tuning indicator (RCA-6U5/6G5). The 7QK4 chassis uses an RCA-6F6 output tube, whereas the 7Q4 uses an RCA-6F6-G output tube.

6Q4 7Q4 7QK4

## MODEL 6Q4

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 34662 | Cord—Condenser drive cord |
| 11761 | Lamp—Mazda No. 51 |
| 35441 | Cone—Cone complete with voice coil, suspension, and dust cap |
| 34571 | Knob—Range switch knob (brown) |
| 34570 | Knob—Tone control knob (brown) |
| 34136 | Knob—Tuning or volume control (brown) |
| 34984 | Knob—Range switch knob (black) |
| 34983 | Knob—Tone control knob (black) |
| 34982 | Knob—Tuning or volume control (black) |
| 34296 | Dial—Marked in kc (6Q4) |




# REPLACEMENT PARTS MODEL 6Q4

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC 441-A)** |
| 34502 | Arm—Operating arm between knob shaft and range switch shaft |
| 10194 | Ball—Steel ball |
| 31767 | Board—Antenna-Ground board |
| 33821 | Capacitor—Trimmer capacitor—4 sections, 3 of 2-10 mmfd. and 1 of 3-30 mmfd. (C18, C19, C20, C21) |
| 12714 | Capacitor—Adjustable trimmer—2-12 mmfd. (C9, C11) |
| 33818 | Capacitor—Trimmer capacitor—2 sections of 2-20 mmfd. each (C12, C15) |
| 33822 | Capacitor—Trimmer capacitor—4 sections, of 3-30 mmfd. each (C1, C2, C3, C44) |
| 12896 | Capacitor—15 mmfd. (C43) |
| 13545 | Capacitor—39 mmfd. (C16) |
| 12723 | Capacitor—56 mmfd. (C24) |
| 12720 | Capacitor—100 mmfd. (C42) |
| 32239 | Capacitor—110 mmfd. (C26) |
| 30232 | Capacitor—200 mmfd. (C6) |
| 12694 | Capacitor—220 mmfd. (C5, C17, C22, C32) |
| 33760 | Capacitor—220 mmfd. (C25, C27, C28) |
| 33235 | Capacitor—580 mmfd. (C13) |
| 12811 | Capacitor—3,600 mmfd. (C10) |
| 31405 | Capacitor—6,000 mmfd. (C7) |
| 5107 | Capacitor—.0025 mfd. (C34, C36) |
| 33584 | Capacitor—.005 mfd. (C35, C38, C39) |
| 32787 | Capacitor—.05 mfd. (C30) |
| 4839 | Capacitor—0.1 mfd. (C29, C33, C45) |
| 33014 | Capacitor—Comprising 3 sections of 10 mfd. and 1 section of 20 mfd. (C37, C40, C41, C46) |
| 33762 | Coil—Antenna coil A-B-C Band (L1, L2, L3, L4) |
| 32823 | Coil—Antenna coil X Band (L5, L6) |
| 33763 | Coil—Detector coil A-B-C Band (L11, L12, L13, L14) |
| 33765 | Coil—Detector coil X Band (L15) |
| 33764 | Coil—Oscillator coil A-B-C Band (L7, L8, L9) |
| 32931 | Coil—Oscillator coil X Band (L10) |
| 33756 | Condenser—Variable tuning condenser (C4, C8, C23) |
| 33816 | Control—Tone control (S7, S8) |
| 33814 | Control—Volume control and power switch (R9, S9) |
| 32635 | Cord—Indicator drive cord |
| 32713 | Core—Core and stud for oscillator coils |
| 33770 | Drive—Planetary tuning drive less balls, shafts, and shaft retainer |
| 33773 | Drum—Variable tuning condenser drum and hub |
| 33185 | Gear—Gear and hub for volume control and switch |
| 33767 | Link—Operating link between knob shaft and range switch |
| 12471 | Plate—Cushion socket mounting plate assembly less socket |

| STOCK No. | DESCRIPTION |
|---|---|
| 14281 | Resistor—68 ohms, ½ watt (R1, R17) |
| 31388 | Resistor—390 ohms, 1 watt (R10) |
| 13716 | Resistor—2,200 ohms, ½ watt (R8) |
| 33489 | Resistor—15,000 ohms, 2½ watt (R5) |
| 13998 | Resistor—22,000 ohms, ½ watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R3) |
| 17440 | Resistor—56,000 ohms, 1 watt (R16) |
| 12285 | Resistor—470,000 ohms, ½ watt (R12, R13) |
| 13730 | Resistor—1 meg., ½ watt (R2, R4) |
| 12679 | Resistor—2.2 meg., ½ watt (R6) |
| 13601 | Resistor—10 meg., ½ watt (R11) |
| 34037 | Retainer—Retaining washer for range switch shaft |
| 33772 | Shaft—Range switch shaft |
| 33768 | Shaft—Shaft and gear for tone control |
| 33771 | Shaft—Tuning shaft |
| 14278 | Socket—Single contact socket and plate for phonograph input |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Condenser drive cord spring |
| 13638 | Spring—Indicator drive cord spring |
| 33769 | Spring—Planetary tuning drive spring |
| 33758 | Switch—Range switch (S1, S2, S3, S4, S5, S6) |
| 33759 | Transformer—First i-f transformer (L16, L17, C25, C26) |
| 33761 | Transformer—Second i-f transformer (L18, L19, C27, C28, R7) |
| 31734 | Transformer—Power transformer 110 volts, 25 cycle (T1) |
| 31733 | Transformer—Power transformer 110 volts, 60 cycle (T1) |
| 31735 | Transformer—Power transformer 105/130-140/160-200/250 volts, 50/60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (RL 79A-2)** |
| 32907 | Cap—Dust cap |
| 33966 | Coil—Field coil (L23) |
| 32906 | Coil—Neutralizing coil (L22) |
| 5118 | Plug—3 prong male speaker plug |
| 32905 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33799 | Dial—Dial scale |
| 34295 | Dial—Glass dial scale (Greek) |
| 33797 | Frame—Dial frame assembly complete less dial scale |
| 33774 | Mounting—Speaker mounting hardware |
| 4982 | Spring—Retaining spring for knob Stock No. 34136 |
| 14270 | Spring—Retaining spring for knob Stock No. 34570 |
| 34138 | Spring—Retaining spring for knob Stock No. 34571 |

# MODELS 7Q4 & 7QK4

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | **RC478A & B** |
| 34401 | Arm—Arm and hub for band indicator less cable—fastens on range switch shaft |
| 34400 | Belt—Drive belt |
| 31767 | Board—"Ant-Gnd" terminal board |
| 32635 | Cable—Cable and clips for band indicator |
| 33821 | Capacitor—Mica trimmer—3 sections 2-10 mmfd. and 1 section 3-30 mmfd. (C18, C19, C20, C21) |
| 12714 | Capacitor—Air trimmer, 2-12 mmfd. (C9, C11) |
| 33818 | Capacitor—Mica trimmer, 2 sections 2-20 mmfd. each (C12, C15) |
| 12896 | Capacitor—15 mmfd. (C43) |
| 33822 | Capacitor—Mica trimmer, 4 sections 3-30 mmfd. each (C1, C2, C3, C44) |
| 13545 | Capacitor—39 mmfd. (C16) |
| 12723 | Capacitor—56 mmfd. (C24) |
| 12720 | Capacitor—100 mmfd. (C42) |
| 32239 | Capacitor—110 mmfd. (C26) |
| 30232 | Capacitor—200 mmfd. (C6) |
| 12694 | Capacitor—220 mmfd. (C5, C17, C22, C32) |
| 33760 | Capacitor—220 mmfd. (C25, C27, C28) |
| 33235 | Capacitor—580 mmfd. (C13) |
| 12811 | Capacitor—3,600 mmfd. (C10) |
| 31405 | Capacitor—6,000 mmfd. (C7) |
| 5107 | Capacitor—.0025 mfd. (C34, C36) |
| 4838 | Capacitor—.005 mfd. (C38, C39, C35) |
| 32787 | Capacitor—.05 mfd. (C30) |
| 4839 | Capacitor—0.1 mfd. (C29, C33, C45) |
| 33014 | Capacitor—Electrolytic—3 sections 10 mfd. and 1 section 20 mfd. (C37, C40, C41) |
| 33762 | Coil—Antenna coil A-B-C Bands (L1, L2, L3, L4) |
| 32823 | Coil—Antenna coil X Band (L5, L6) |
| 33763 | Coil—Detector coil A-B-C Bands (L11, L12, L13, L14) |
| 33765 | Coil—Detector coil X Band (L15) |
| 33764 | Coil—Oscillator coil A-B-C Bands (L7, L8, L9) |
| 32931 | Coil—Oscillator coil X Band (L10) |
| 33756 | Condenser—3 gang variable tuning condenser (C4, C8, C23) |
| 34403 | Control—Tone control |
| 34662 | Cord—Pointer drive cord |
| 32713 | Core—Adjustable core and stud for A-B-C Band Coil |
| 34392 | Drum—Variable condenser drive drum |
| 11891 | Lamp—Dial lamp |
| 14028 | Nut—Clamping nut for air trimmer |
| 31817 | Plate—Cushion socket mounting plate less socket |
| 5119 | Plug—3 contact female plug for speaker cable |
| 12493 | Plug—5 contact female plug for speaker cable |
| 34399 | Pulley—Drive belt pulley and set screws for tuning knob shaft |
| 34398 | Pulley—Drive belt pulley and set screws for intermediate drive shaft |
| 31373 | Pulley—Drive cord pulley for L. H. support |
| 34402 | Pulley—Drive cord pulley and bracket for R. H. support |
| 34394 | Pulley—L. H. support and drive cord pulleys (2) assembled, less loose pulley |
| 34404 | Pulley—L. H. support and drive cord pulleys (3) assembled (Model 7QK4) |
| 34395 | Pulley—R. H. support and drive cord pulleys (2) assembled, less loose pulley and bracket |
| 34405 | Pulley—R. H. support and drive cord pulleys (3) assembled (Model 7QK4) |
| 14281 | Resistor—68 ohm, ½ watt (R1, R17) |
| 31388 | Resistor—390 ohms, 1 watt (R10) |
| 13716 | Resistor—2,200 ohms, ½ watt (R8) |
| 33489 | Resistor—15,000 ohms, 2½ watt (R5) |
| 13998 | Resistor—22,000 ohms, ½ watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R3) |
| 17440 | Resistor—56,000 ohms, 1 watt (R16) |
| 12285 | Resistor—470,000 ohms, ½ watt (R12, R13) |
| 12013 | Resistor—1 megohm, 1/10 watt |
| 13730 | Resistor—1 megohm, ½ watt (R2, R4) |
| 12679 | Resistor—2.2 megohm, ½ watt (R6) |
| 13601 | Resistor—10 megohm, ½ watt (R11) |
| 30340 | Retainer—Retaining clip for pulley Stock No. 31373 |
| 34396 | Shaft—Intermediate tuning drive shaft, and drive cord pulley less drive belt, pulley and set screws |
| 34397 | Shaft—Intermediate tuning drive shaft, and flywheel—less drive belt pulley and set screws |
| 31364 | Socket—Dial lamp socket |
| 34864 | Socket—Magic Eye socket |
| 14278 | Socket—Phono. input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Pointer drive cord tension spring |
| 34390 | Switch—Range switch (S1, S2, S3, S4, S5, S6) |
| 33759 | Transformer—First i.f. transformer (L16, L17, L20, C25, C26) |
| 33761 | Transformer—Second i.f. transformer (L18, L19, C27, C28, C31, R7) |
| 31735 | Transformer—Power transformer—105/130, 140/160, 195/250 volts, 50/60 cycles |
| 34389 | Volume control—Volume control and power switch (R9, S9) |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL 63K2) MODEL 7Q4** |
| 31825 | Cap—Dust cap |
| 34615 | Cone—Cone complete with voice coil |
| 5118 | Plug—3 contact male plug for speaker |
| 34614 | Speaker—Speaker complete with cone less output transformer and plug |
| 14355 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (RL 70J4) MODEL 7QK4** |
| 31825 | Cap—Speaker cone dust cap |
| 33116 | Coil—Speaker field coil |
| 11469 | Coil—Speaker hum neutralizing coil |
| 31275 | Cone—Cone and voice coil assembly |
| 5118 | Plug—3 prong male speaker plug |
| 14355 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| MI 8105 | Adapter—European adapter for power cord |
| 30765 | Cap—"Magic Eye" rubber cap |
| 30716 | Clip—"Magic Eye" clip |
| 34486 | Dial—Glass dial scale (English) |
| 34504 | Dial—Glass dial scale (Greek) |
| 34485 | Frame—Dial frame complete with brackets and pulleys less dial, indicator pointer, pointer rods, band indicator, band indicator spring and Magic Eye clip |
| 34488 | Indicator—Band indicator |
| 34487 | Indicator—Station selector indicator pointer |
| 34494 | Knob—Tone control knob |
| 34489 | Knob—Tuning range switch or volume control and power switch knob |
| 31482 | Screw—No. 8-32 square head set screw for shafts Stock No. 34492, 34493 |
| 33438 | Screw—Magic Eye clip screw |
| 34491 | Shaft—Indicator pointer guide shaft |
| 34492 | Shaft—Tone control extension shaft (Model 7Q4) |
| 34493 | Shaft—Tone control extension shaft (Model 7QK4) |
| 30756 | Spring—Band indicator spring |
| 4982 | Spring—Retaining spring for knob Stock No. 34494, 34489 |
| 33726 | Washer—Band indicator retaining washer |

## MODELS 7Q4, 7QK4

**Additional Replacement Part:**

Stock No.

35194 Dial—Marked in kc

# MODEL 6Q4X

Chassis No. RC-442

## Six-Tube, Four-Band, AC-DC, Superheterodyne Receiver

REFER TO MODEL 6Q4 FOR ALIGNMENT PROCEDURE

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave ("X" Band) | 145-405 kc (2,069-740 m) |
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22.0 mc (42.8-13.6 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SK7 ..... R-F Amplifier
(2) RCA-6SA7 ..... 1st Detector-Oscillator
(3) RCA-6SK7 ..... I-F Amplifier
(4) RCA-6SQ7 .... 2nd Detector, A.V.C., and A-F Amplifier
(5) RCA-25L6-G ..... Output
(6) RCA-25Z6-G ..... Rectifier

PILOT LAMPS (2) ..... Mazda No. 47, 6.3 volts, .15 amp.

POWER OUTPUT RATING (125 volts, a-c)

| | |
|---|---|
| Undistorted | 1.4 watts |
| Maximum | 2.5 watts |

LOUDSPEAKER (84659-1)

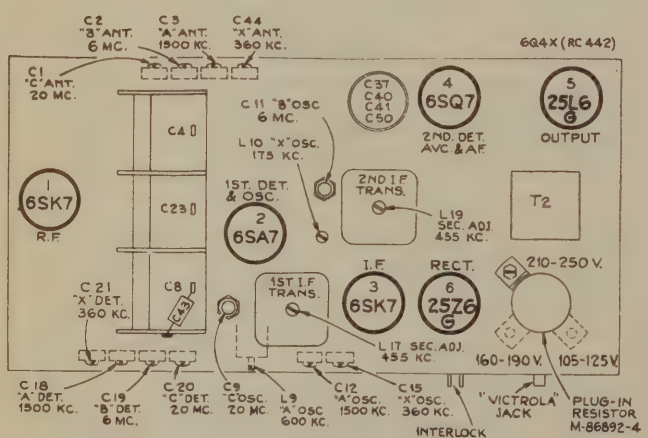
Type ..... 6-inch permanent-magnet
V.C. Impedance .... 3.4 ohms at 400 cycles

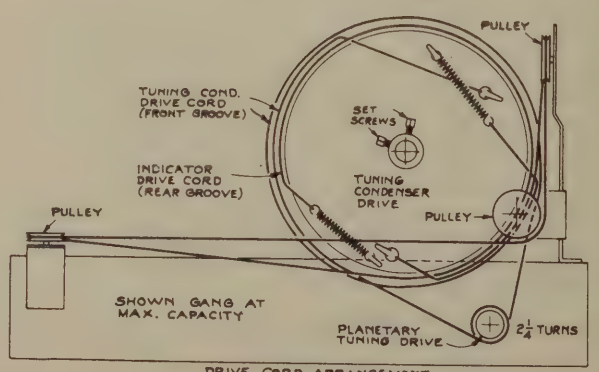
POWER SUPPLY RATINGS

105-125 volts, 40-100 cycles; or DC
160-190 volts, 40-100 cycles; or DC
210-250 volts, 40-100 cycles; or DC

POWER CONSUMPTION

| | |
|---|---|
| 105-125 volts | 60 watts |
| 210-250 volts | 130 watts |






DRIVE CORD ARRANGEMENT

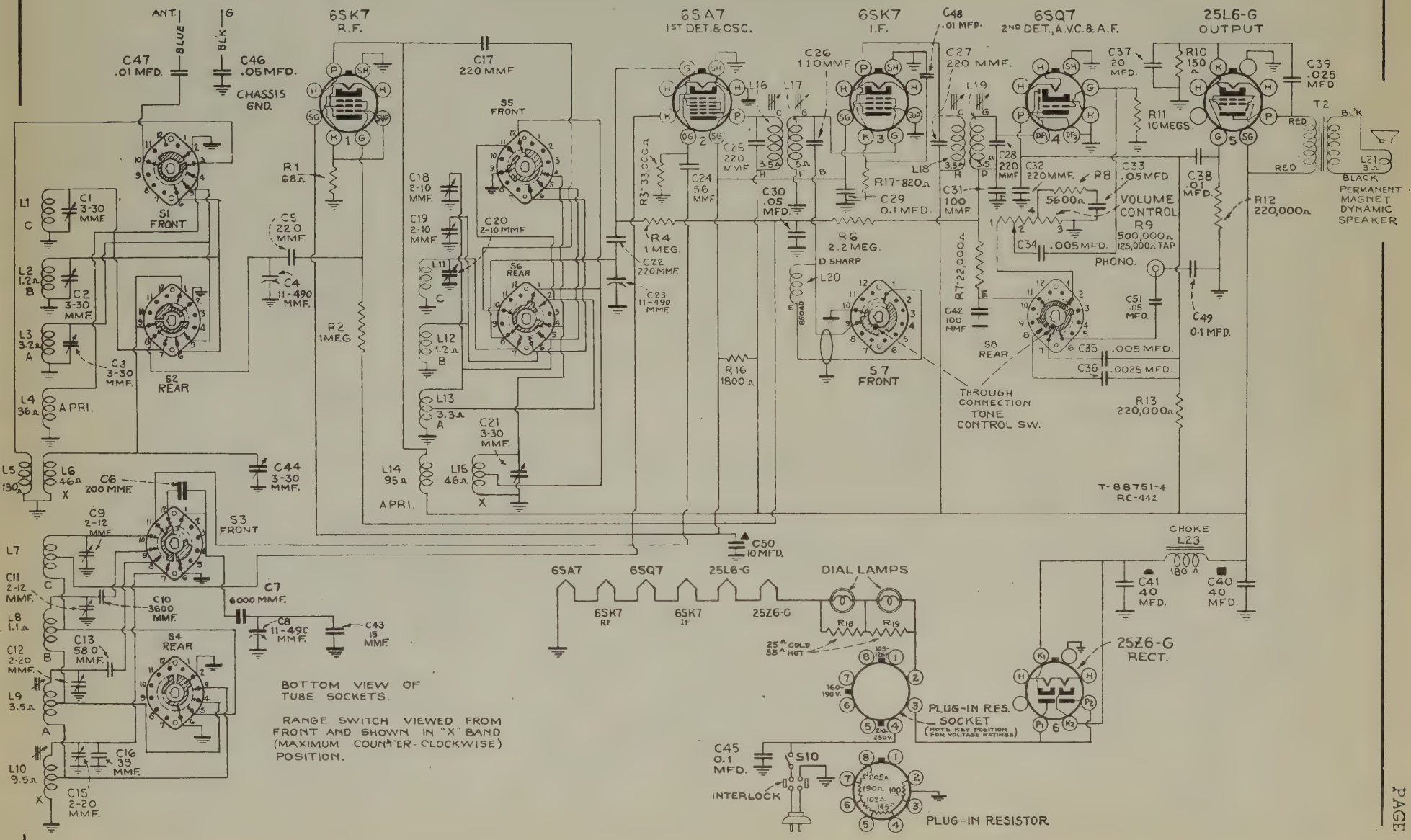
**Phonograph Operation:**

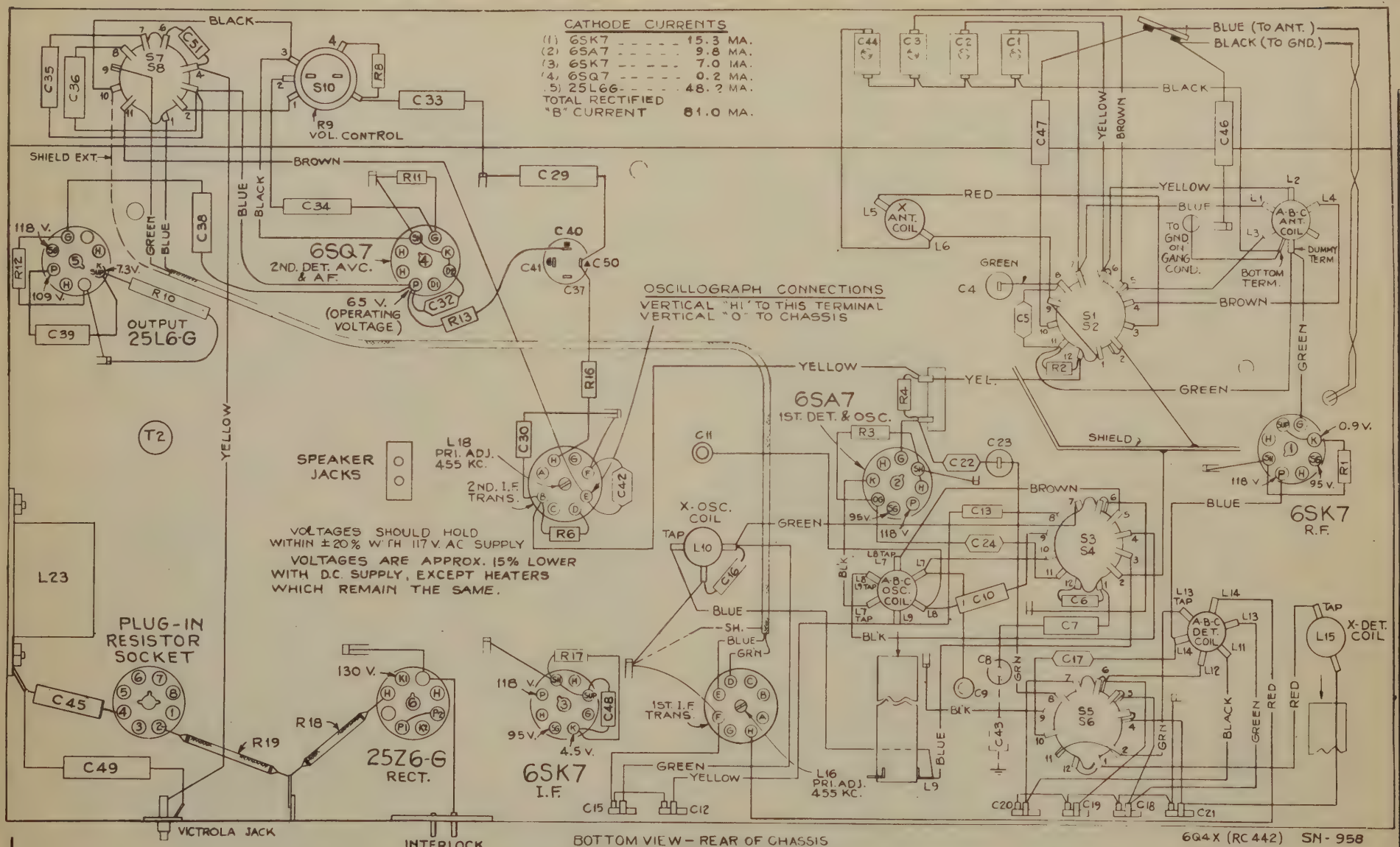
A jack is provided on the rear of the chassis for connection to a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

The attachment must be designed to operate on the particular voltage and frequency of the power supply line. (Most attachments are for alternating current only, and can not be used on direct current.)

**Precautionary Lead Dress:**

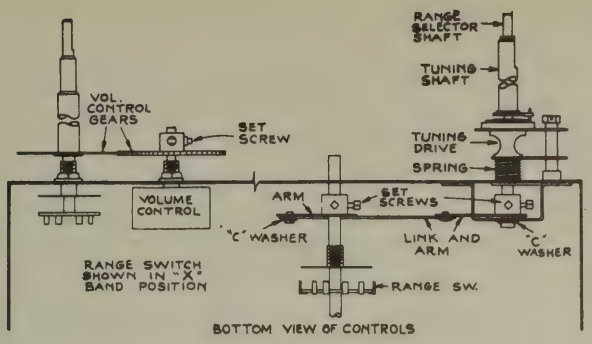
1. Dress black lead from L11 to C20 against terminals 6 and 7 of S6.
2. Dress the green lead from the middle section of the gang away from any other leads, parts, or chassis.
3. Dress the black diode lead running between the 6SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.
4. Twist the power leads together and dress them away from the 6SQ7 socket.
5. Dress the brown lead from terminal E on the 2nd I-F transformer to terminal 11 on S8 against the chassis.
6. Dress the black lead from trimmer (C1) to antenna coil away from the range switch link action.


ANT
G
BLUE
BLK
C47 .01 MFD.
C46 .05MFD.
CHASSIS GND.
6SK7 R.F.
6SA7 1ST DET. & OSC.
6SK7 I.F.
6SQ7 2ND DET., A.V.C. & A.F.
25L6-G OUTPUT
C48 .01 MFD.
C17 220 MMF
C26 110MMF.
C27 220 MMF.
C37 20 MFD.
R10 150Ω
C39 .025 MFD
T2
BLK
RED
RED
L21 3Ω
BLACK
PERMANENT MAGNET DYNAMIC SPEAKER
S5 FRONT
S1 FRONT
S2 REAR
S6 REAR
S7 FRONT
S8 REAR
S3 FRONT
S4 REAR
R1 68Ω
R2 1MEG.
R3 33,000Ω
R4 1 MEG.
R6 2.2 MEG.
R8 5600Ω
R9 500,000Ω 125,000Ω TAP
VOLUME CONTROL
R11 10 MEGS.
R12 220,000Ω
R13 220,000Ω
R16 1800Ω
R17 820Ω
R18
R19
C1 3-30 MMF.
C2 3-30 MMF.
C3 3-30 MMF.
C4 11-490 MMF.
C5 220 MMF.
C18 2-10 MMF.
C19 2-10 MMF.
C20 2-10 MMF.
C21 3-30 MMF.
C22 220 MMF.
C23 11-490 MMF.
C24 56 MMF.
C25 220 MMF.
C28 220 MMF.
C29 0.1 MFD.
C30 .05 MFD.
C31 100 MMF.
C32 220 MMF.
C33 .05 MFD.
C34 .005 MFD.
C35 .005 MFD.
C36 .0025 MFD.
C38 .01 MFD.
C42 100 MMF
C49 0.1 MFD.
C50 10 MFD.
C51 05 MFD.
C44 3-30 MMF.
C6 200 MMF.
C9 2-12 MMF.
C10 3600 MMF.
C11 2-12 MMF.
C12 2-20 MMF.
C13 580 MMF.
C16 39 MMF.
C15 2-20 MMF.
C7 6000 MMF.
C8 11-490 MMF.
C43 15 MMF.
L1 C
L2 1.2Ω B
L3 3.2Ω A
L4 36Ω A PRI.
L5 130Ω
L6 46Ω X
L7 C
L8 1.1Ω
L9 3.5Ω A
L10 9.5Ω X
L11 C
L12 1.2Ω B
L13 3.3Ω A
L14 95Ω APRI.
L15 46Ω X
L16
L17
L18
L19
L20
L23 CHOKE 180Ω
C41 40 MFD.
C40 40 MFD.
D SHARP
BROAD
RT 22,000Ω
THROUGH CONNECTION TONE CONTROL SW.
PHONO.
T-88751-4 RC-442
6SA7 6SQ7 25L6-G
6SK7 RF
6SK7 IF
25Z6-G
DIAL LAMPS
25Z6-G RECT.
25° COLD 35° HOT
105-125V
160-190V.
200-250V.
PLUG-IN RES. SOCKET
(NOTE KEY POSITION FOR VOLTAGE RATINGS)
C45 0.1 MFD.
S10
INTERLOCK
1-205Ω
190Ω
102Ω
100
14.5Ω
PLUG-IN RESISTOR
BOTTOM VIEW OF TUBE SOCKETS.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "X" BAND (MAXIMUM COUNTER-CLOCKWISE) POSITION.

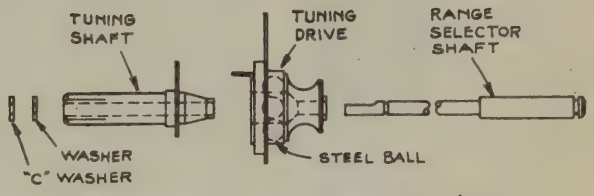



BOTTOM VIEW – REAR OF CHASSIS

R-F WIRING AND SOCKET VOLTAGES



BOTTOM VIEW OF CONTROLS



PLANETARY TUNING DRIVE ASS'Y

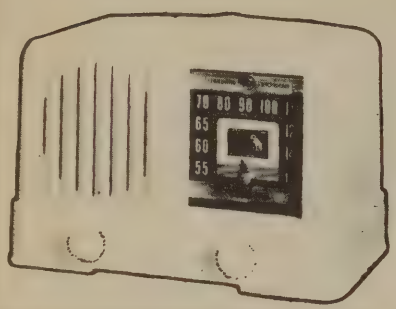
# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily indentified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-442)** |
| 10194 | Ball—Steel ball |
| 33947 | Ballast—Ballast resistor tube—Type 86892-4 |
| 12896 | Capacitor—15 mmfd. (C43) |
| 13545 | Capacitor—39 mmfd. (C16) |
| 12723 | Capacitor—56 mmfd. (C24) |
| 12720 | Capacitor—100 mmfd. (C31, C42) |
| 32239 | Capacitor—110 mmfd. (C26) |
| 30232 | Capacitor—200 mmfd. (C6) |
| 12694 | Capacitor—220 mmfd. (C5, C17, C22, C32) |
| 33760 | Capacitor—220 mmfd. (C25, C27, C28) |
| 33235 | Capacitor—580 mmfd. (C13) |
| 12811 | Capacitor—3,600 mmfd. (C10) |
| 31405 | Capacitor—6,000 mmfd. (C7) |
| 33818 | Capacitor—Trimmer capacitor—2 sections of 2-20 mmfd. each (C12, C15) |
| 33822 | Capacitor—Trimmer capacitor—4 sections of 3-30 mmfd. each (C1, C2, C3, C44) |
| 33821 | Capacitor—Trimmer capacitor—4 sections, of 3 2-10 mmfd. each and 1 of 3-30 mmfd. (C18, C19, C20, C21) |
| 5107 | Capacitor—.0025 mfd. (C36) |
| 33584 | Capacitor—.005 mfd. (C34, C35) |
| 4937 | Capacitor—.01 mfd. (C38, C47, C48) |
| 4870 | Capacitor—.025 mfd. (C39) |
| 32787 | Capacitor—.05 mfd. (C30, C33, C46, C51) |
| 4839 | Capacitor—0.1 mfd. (C29, C45, C49) |
| 12714 | Capacitor—Trimmer capacitor—2-12 mfd. (C9, C11) |
| 33824 | Capacitor—Comprising 2 sections of 40 mfd., 1 of 10 mfd. and 1 of 20 mfd. (C37, C40, C41, C50) |
| 33762 | Coil—Antenna coil—A-B-C bands (L1, L2, L3, L4) |
| 32823 | Coil—Antenna coil—X band (L5, L6) |
| 33764 | Coil—Oscillator coil—A-B-C bands (L7, L8, L9) |
| 32931 | Coil—Oscillator coil—X band (L10) |
| 33763 | Coil—Detector coil—A-B-C bands (L11, L12, L13, L14) |
| 33765 | Coil—Detector coil—X band (L15) |
| 33756 | Condenser—Variable tuning condenser (C4, C8, C23) |
| 33951 | Control—Volume control and power switch (R9, S10) |
| 32634 | Cord—Variable tuning condenser drive cord |
| 32635 | Cord—Indicator drive cord |
| 32713 | Core—Core and stud assembly for oscillator coils |
| 33770 | Drive—Planetary tuning drive complete, less shafts |
| 33773 | Drum—Variable tuning condenser drum |
| 33185 | Gear—Gear and hub for volume control and power switch |
| 33768 | Gear—Shaft and gear for tone control |
| 31480 | Lamp—Pilot lamp |
| 33767 | Link—Operating link between knob, shaft and range switch |
| 33825 | Plug—2-prong male plug for power input |
| 32709 | Reactor—Filter reactor (L23) |
| 33947 | Resistor—Ballast resistor tube—Type 86892-4 |
| 33953 | Resistor—Flexible resistor (R18, R19) |
| 14281 | Resistor—68 ohms, ½ watt (R1) |
| 30880 | Resistor—150 ohms, ½ watt (R10) |
| 14076 | Resistor—820 ohms, ½ watt (R17) |
| 12194 | Resistor—1,800 ohms, ½ watt (R16) |
| 13714 | Resistor—5,600 ohms, ½ watt (R8) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R3) |
| 12264 | Resistor—220,000 ohms, ½ watt (R12, R13) |
| 13730 | Resistor—1 megohm, ½ watt (R2, R4) |
| 12679 | Resistor—2.2 megohm, ½ watt (R6) |
| 13601 | Resistor—10 megohm, ½ watt (R11) |
| 33180 | Retainer—Planetary drive retaining ring |
| 33771 | Shaft—Tuning knob shaft |
| 33772 | Shaft—Range switch shaft |
| 31365 | Socket—Lamp socket |
| 33742 | Socket—Phonograph input socket |
| 30956 | Socket—Speaker socket |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Indicator drive cord spring |
| 33769 | Spring—Planetary tuning drive spring |
| 33758 | Switch—Range switch (S1, S2, S3, S4, S5, S6) |
| 33816 | Switch—Tone control, and phono. switch (S7, S8) |
| 33759 | Transformer—First i-f transformer (L16, L17, C25, C26) |
| 33761 | Transformer—Second i-f transformer (L18, L19, C27, C28, C31, R7) |
| 33826 | Transformer—Output transformer (T2) |
| 33947 | Tube—Ballast resistor tube—Type 86892-4 |
| | **SPEAKER ASSEMBLIES (84659-1)** |
| 33962 | Cone—Cone, voice coil and center suspension assembled in metal housing (L21) |
| 33828 | Speaker—Speaker complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32836 | Cord—Power cord complete with male and female connectors |
| 34296 | Dial—Glass dial scale (English) |
| 34503 | Dial—Glass dial scale (Arabic) |
| 33797 | Frame—Dial frame assembly complete, less dial |
| 34136 | Knob—Tuning or volume control knob |
| 34570 | Knob—Tone control knob |
| 34571 | Knob—Range switch knob |
| 33774 | Mounting—Speaker hardware mounting |
| 4982 | Spring—Retaining spring for knob, Stock No. 34136 |
| 14270 | Spring—Retaining spring for knob, Stock No. 34570 |
| 34138 | Spring—Retaining spring for knob, Stock No. 34571 |

# MODEL 6X2

## Chassis No. RC-1013



| NUMBER STAMPED ON SPEAKER | CONE AND VOICE COIL STOCK No. | FIELD COIL STOCK No. |
|---|---|---|
| RL-86-A3 | 35570 | 39543 |
| RL-86-B1 | 39447 | 39448 |
| RL-86-B4 | 39447 | 39448 |
| 92161-3 | 38352 | PM |
| 92161-4 | 39535 | PM |
| 92161-5 | 38352 | PM |
| 92322-2 | 39536 | PM |
| 92374-1 | 39537 | PM |

## SUBSTITUTE SPEAKERS

WHEN ORDERING REPLACEMENT PARTS FOR SPEAKERS, NOTE THE IDENTIFICATION NUMBER STAMPED ON THE SPEAKER FRAME. IF THE NUMBER STAMPED ON THE SPEAKER DOES NOT APPEAR IN THE FOLLOWING LIST, ORDER THE REQUIRED PART BY DESCRIPTION, AND SPECIFY THE IDENTIFYING NUMBER STAMPED ON THE SPEAKER AND THE RECEIVER MODEL NUMBER.

Alternate "EM" and "PM" speaker connections are shown in the accompanying diagrams.

## Specifications

FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

POWER SUPPLY RATINGS
105-125 volts, direct current, or 50-60 cycles ..... 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)
Undistorted ..... 0.8 watts  Maximum ..... 1.2 watts

LOUDSPEAKER RL-81-B2 ..... 5 inch permanent magnet
or RL-86-A3 ..... 5 inch electro magnet

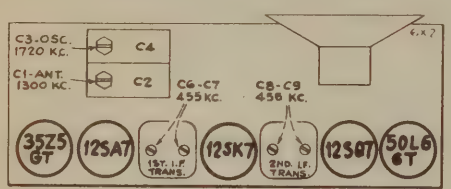
## Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil and turn the receiver volume control to maximum.

Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

Test-Oscillator.—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.



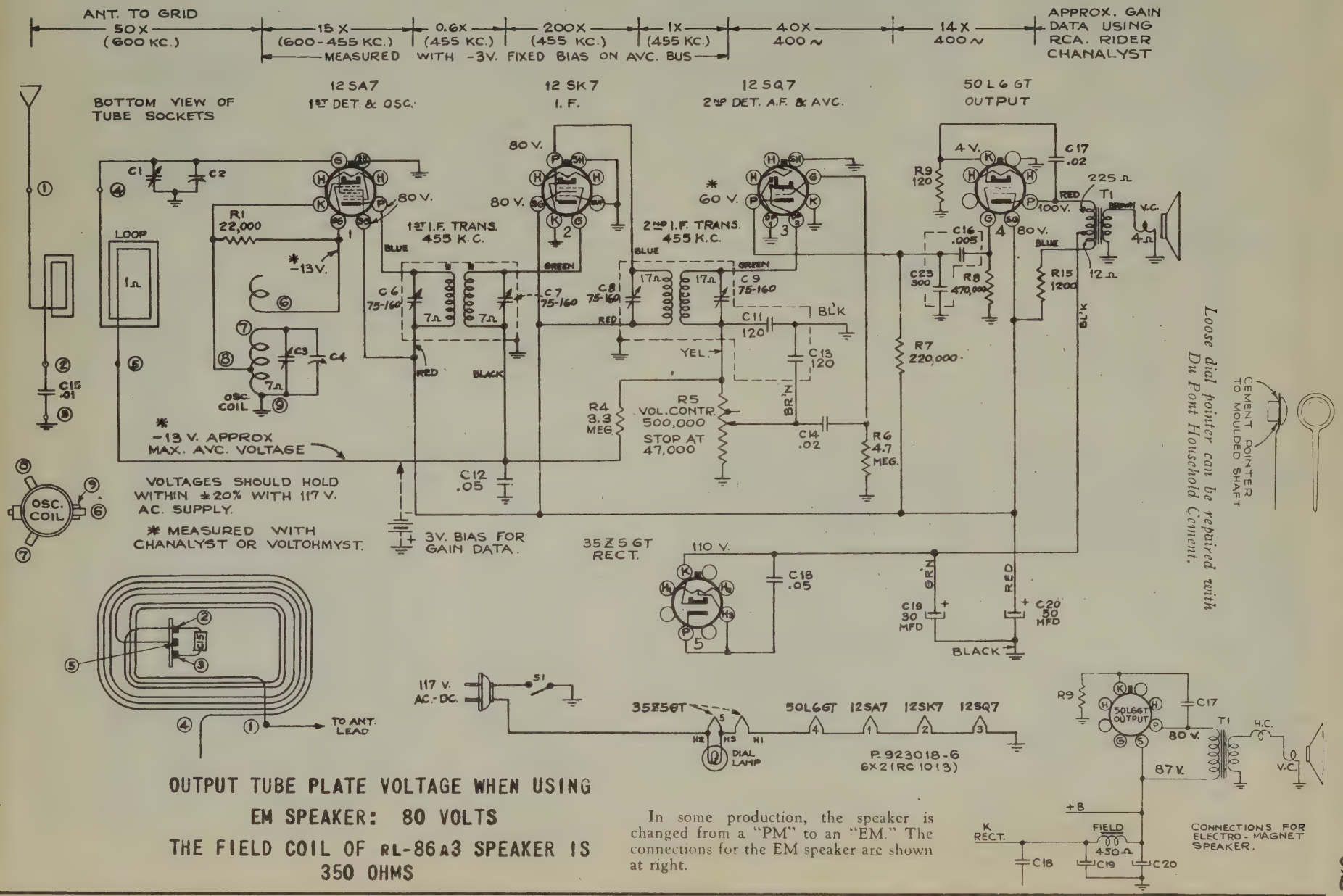

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc. | Quiet point 1,600 kc end of dial | C8, C9 2nd I-F Transformer |
| 2 | 1st Det. grid in series with .01 mfd. | | | C6, C7 1st I-F Transformer |
| 3 | Ant. terminal in series with 100 mmfd. | 1,720 kc | Gang at minimum | C3 (osc.) |
| 4 | Radiated signal 1300 kc | | Signal Frequency | C1 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1013)** |
| 36301 | Capacitor—Electrolytic, comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of 300 mmfd. |
| 4937 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 36234 | Coil—Oscillator coil |
| 38311 | Condenser—Variable tuning condenser |
| 36242 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 17-in. overall length) |
| 38313 | Dial—Dial scale |
| 38314 | Indicator—Station selector indicator |
| 31480 | Lamp—Dial lamp |
| 37915 | Loop—Antenna loop complete |
| 38312 | Plate—Dial plate—less dial |
| 30189 | Resistor—120 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt (for models using P.M. speaker) |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 36235 | Shaft—Tuning knob shaft |
| 35094 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 38994 | Transformer—Audio transformer—used with E.M. speaker |
| 36800 | Transformer—Audio transformer—used with P.M. speaker |
| 36232 | Transformer—First I.F. transformer |
| 37364 | Transformer—Second I.F. transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **P.M. SPEAKER ASSEMBLIES (RL81B2)** |
| 35570 | Cone—Cone complete with voice coil |
| | **E.M. SPEAKER ASSEMBLIES (RL86A3)** |
| 35570 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35102 | Back—Cabinet back cover |
| 35104 | Crystal—Dial scale crystal—less dial |
| 33317 | Fastener—Push on fastener for back |
| 35678 | Fastener—Push on fastener for crystal |
| 36723 | Knob—Tuning or volume control knob |
| 30900 | Spring—Retaining spring for knob |


ANT. TO GRID
50X
(600 KC.)
15X
(600-455 KC.)
0.6X
(455 KC.)
200X
(455 KC.)
1X
(455 KC.)
4.0X
400 ~
14X
400 ~
APPROX. GAIN DATA USING RCA. RIDER CHANALYST
MEASURED WITH -3V. FIXED BIAS ON AVC. BUS
BOTTOM VIEW OF TUBE SOCKETS
12SA7
1ST DET. & OSC.
12SK7
I. F.
12SQ7
2ND DET. A.F. & AVC.
50L6GT
OUTPUT
LOOP
1Ω
C1
C2
R1
22,000
-13V.
C3
C4
7Ω
OSC. COIL
C15
.01
80 V.
1ST I.F. TRANS.
455 K.C.
2ND I.F. TRANS.
455 K.C.
BLUE
GREEN
RED
BLACK
C6
75-160
C7
75-160
C8
75-160
C9
75-160
17Ω
60 V.
4 V.
C17
.02
R9
120
225Ω
T1
100 V.
V.C.
4Ω
C16
.005
C23
300
R8
470,000
R15
1200
12Ω
BLK
C11
120
C13
120
YEL.
BR'N
R4
3.3
MEG.
R5
VOL. CONTR.
500,000
STOP AT
47,000
C14
.02
R6
4.7
MEG.
R7
220,000
C12
.05
-13 V. APPROX
MAX. AVC. VOLTAGE
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
3V. BIAS FOR GAIN DATA.
OSC. COIL
35Z5GT
RECT.
110 V.
C18
.05
C19
30
MFD
C20
50
MFD
GRN
RED
BLACK
117 V.
AC.-DC.
S1
TO ANT. LEAD
DIAL LAMP
P-923018-6
6X2 (RC 1013)
OUTPUT TUBE PLATE VOLTAGE WHEN USING EM SPEAKER: 80 VOLTS
THE FIELD COIL OF RL-86A3 SPEAKER IS 350 OHMS
In some production, the speaker is changed from a "PM" to an "EM." The connections for the EM speaker are shown at right.
87 V.
+B
K
RECT.
FIELD
450Ω
CONNECTIONS FOR ELECTRO-MAGNET SPEAKER.
Loose dial pointer can be repaired with Du Pont Household Cement.
CEMENT POINTER TO MOULDED SHAFT

# MODELS HF-6, HF-8, U-132, U-134

## Fourteen- and Sixteen-Tube, Seven-Band, Electric-Tuning, A-C, Radios and Victrolas

REFER TO INDEX FOR DATA ON ELECTRIC TUNING AND AUTOMATIC RECORD CHANGER

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "Medium Wave" (B) | 2,300-7,000 kc |
| "Short Wave" (C) | 7,000-22,000 kc |
| "49 Meter" Band | 5,920-6,230 kc |
| "31 Meter" Band | 9,480-9,700 kc |
| "25 Meter" Band | 11,680-11,940 kc |
| "19 Meter" Band | 15,080-15,390 kc |

Intermediate Frequency ..... 455 kc

R-F ALIGNMENT FREQUENCIES

| | |
|---|---|
| "A" Band | 600 kc (osc.); 1,500 kc (osc., ant., det.) |
| "B" Band | 2,400 kc (osc.); 6,100 kc (osc., ant.) |
| "C" Band | 9,600 kc (osc.); 20,000 kc (osc., ant.) |
| 31 M | 9,600 kc (osc., ant., det.) |
| 49M | 6,100 kc (osc.) |
| 25M | 11,800 kc (osc.) |
| 19M | 15,200 kc (osc.) |

RCA TUBE COMPLEMENT (Models HF-8, U-134)

| | |
|---|---|
| ( 1) 6K7 | R-F Amplifier |
| ( 2) 6L7 | First Detector |
| ( 3) 6J7 | Oscillator |
| ( 4) 6J7 | Oscillator Control |
| ( 5) 6K7 | First I.F. |
| ( 6) 6K7 | Second I.F. |
| ( 7) 6H6 | Second Detector and Muting |
| ( 8) 6H6 | Discriminator and AVC |
| ( 9) 6U5 | Tuning Tube |
| (10) 6J5 | First Audio |
| (11) 6J5 | Second Audio |
| (12) 6J5 | Inverter |
| (13) 6L6 | Power Output |
| (14) 6L6 | Power Output |
| (15) 5T4 | Rectifier |
| (16) 5T4 | Rectifier |

(Models HF-6, U-132)

| | |
|---|---|
| ( 1) 6K7 | R-F Amplifier |
| ( 2) 6L7 | First Detector |
| ( 3) 6J7 | Oscillator |
| ( 4) 6J7 | Oscillator Control |
| ( 5) 6K7 | First I.F. |
| ( 6) 6K7 | Second I.F. |
| ( 7) 6R7 | Second Detector, Muting, First A.F. |
| ( 8) 6H6 | Discriminator and AVC |
| ( 9) 6U5 | Tuning Tube |
| (10) 6J5 | Second Audio |
| (11) 6J5 | Inverter |
| (12) 6F6 | Output |
| (13) 6F6 | Output |
| (14) 5T4 | Rectifier |

Pilot Lamps (3) ..... Radio: (2) 6.3 volts, 0.25 ampere Mazda No. 44; (1) 6.3 volts, 0.15 ampere Mazda No. 47
Phono: (1) 6.3 volts, 0.25 ampere Mazda No. 44

POWER SUPPLY RATINGS

| | Model HF-6 | Model HF-8 |
|---|---|---|
| Rating A—105-125 volts, 50-60 cycles | 135 watts | 180 watts |
| Rating B—105-125 volts, 25 cycles | 135 watts | 180 watts |
| Rating C—100-130/140-160/195-250 volts, 50-60 cycles | 135 watts | 180 watts |

| | Model U-132 | | Model U-134 | |
|---|---|---|---|---|
| | Radio Only | Total | Radio Only | Total |
| Rating A —105-125 volts, 50-60 cycles | 135 watts | 160 watts | 180 watts | 205 watts |
| Rating A6—105-125 volts, 60 cycles | 135 watts | 160 watts | 180 watts | 205 watts |
| Rating B2—105-125 volts, 25 cycles | 135 watts | 160 watts | 180 watts | 205 watts |
| Rating C —105-130/140-160/200-250 volts, 50-60 cycles | 135 watts | 160 watts | 180 watts | 205 watts |
| Rating C6—105-130/140-160/200-250 volts, 60 cycles | 135 watts | 160 watts | 180 watts | 205 watts |

POWER OUTPUT (Models HF-8, U-134)

| | |
|---|---|
| Undistorted | 20 watts |
| Maximum | 24 watts |

(Models HF-6, U-132)

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER

Type ..... 12-inch Electrodynamic (Triple Cone)
Voice Coil Impedance ..... 11.3 ohms at 400 cycles

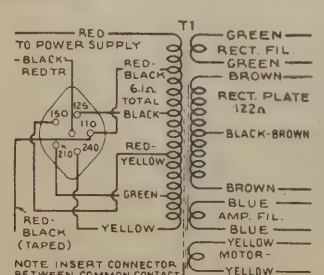
PHONOGRAPH (Models U-132, U-134 Only)

Type ..... Automatic
Record Capacity ..... Eight 10-inch or seven 12-inch
Turntable Speed ..... 78 r.p.m. (adjustable)
Type Pickup ..... Crystal
Pickup Impedance ..... 80,000 ohms at 1,000 cycles

## MODELS HF-8A AND U-134A

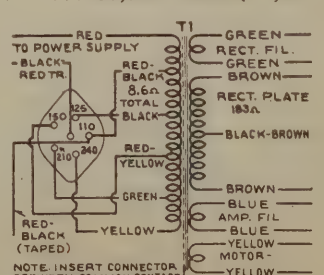
**Technical Information and Service Data:**

All information published in Service Notes for Models HF-8 and U-134 applies to these models, except that referring to remote control. This device is not incorporated on the "A" models.



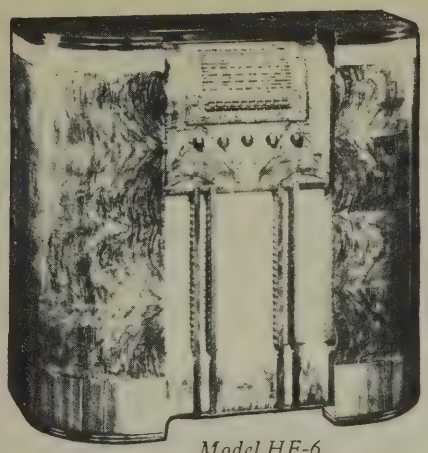

*Models HF-8, U-134*

(110-volt supply for a Victrola motor is obtained by connecting the motor to the red and the red-black leads.)

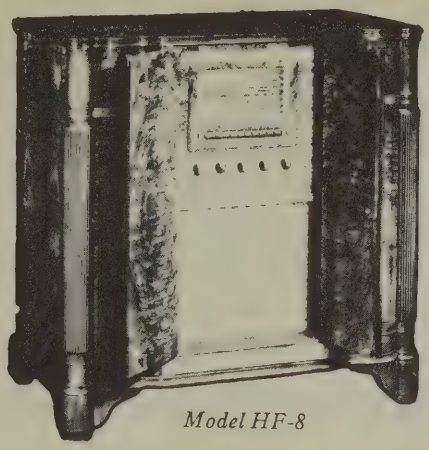



*Models HF-6, U-132*

*Universal Power Transformer Connections*

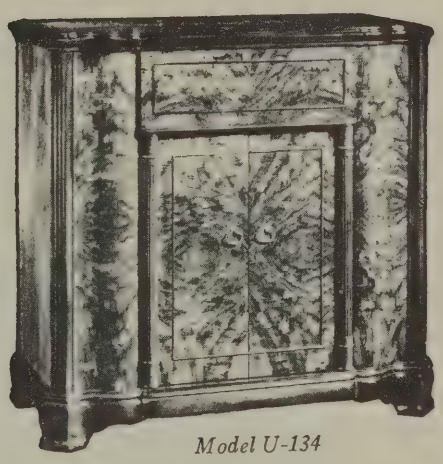


*Model HF-6*



*Model HF-8*

*Model U-132*



*Model U-134*

# ALIGNMENT PROCEDURE

Alignment using the Cathode Ray Oscillograph is much the preferable method because of the variable selectivity features of these instruments. The curves shown below, illustrate the general shape of the i-f selectivity curves for different settings of the Fidelity control, when i-f channel is properly aligned. Connections for the oscillograph are shown in the top view of the receiver chassis. Use short, unshielded leads to oscillograph, and well-shielded leads from test oscillator. If possible, use 30 or 40 kc sweep frequency for i-f alignment.

**Output Meter Alignment.**—If this method is used, connect meter across voice coil, and turn receiver volume control to maximum. Disregard steps 4 and 7 of alignment table given below. However, a listening check should be made to check operation of Fidelity control, after receiver has been aligned.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the ground terminal, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

**Precautionary Lead Dress**

1. C-31, C-32, C-33, C-35, C-36, C-40 should be connected with as short leads as possible.
2. "Osc. Control" grid lead should be dressed away from the high side of "A" Band Oscillator trimmer.
3. The lead from "A" Band R-F Coil to the R-F Tube should be dressed away from chassis and shield.
4. Lead from "A" to "C" Band Antenna Coils should be dressed away from the shield.
5. The antenna leads inside the chassis should go directly to the terminals to which they connect.
6. The lead from the rectifier tube to the first filter capacitor should be dressed away from the Victrola connection.
7. The leads to the push-button switches should be dressed away from the Victrola switch, and its associated parts.
8. The output transformer primary leads should be dressed down to the chassis.
9. The 2nd Detector Diode lead should be dressed away from the lead to the discriminator diode. This latter lead should be dressed down to the chassis.

**Additional Critical Leads—Models HF-6, U-132**

10. Dress Pilot Light leads away from 6R7 grid cap.

**Additional Critical Leads—Models U-132, U-134**

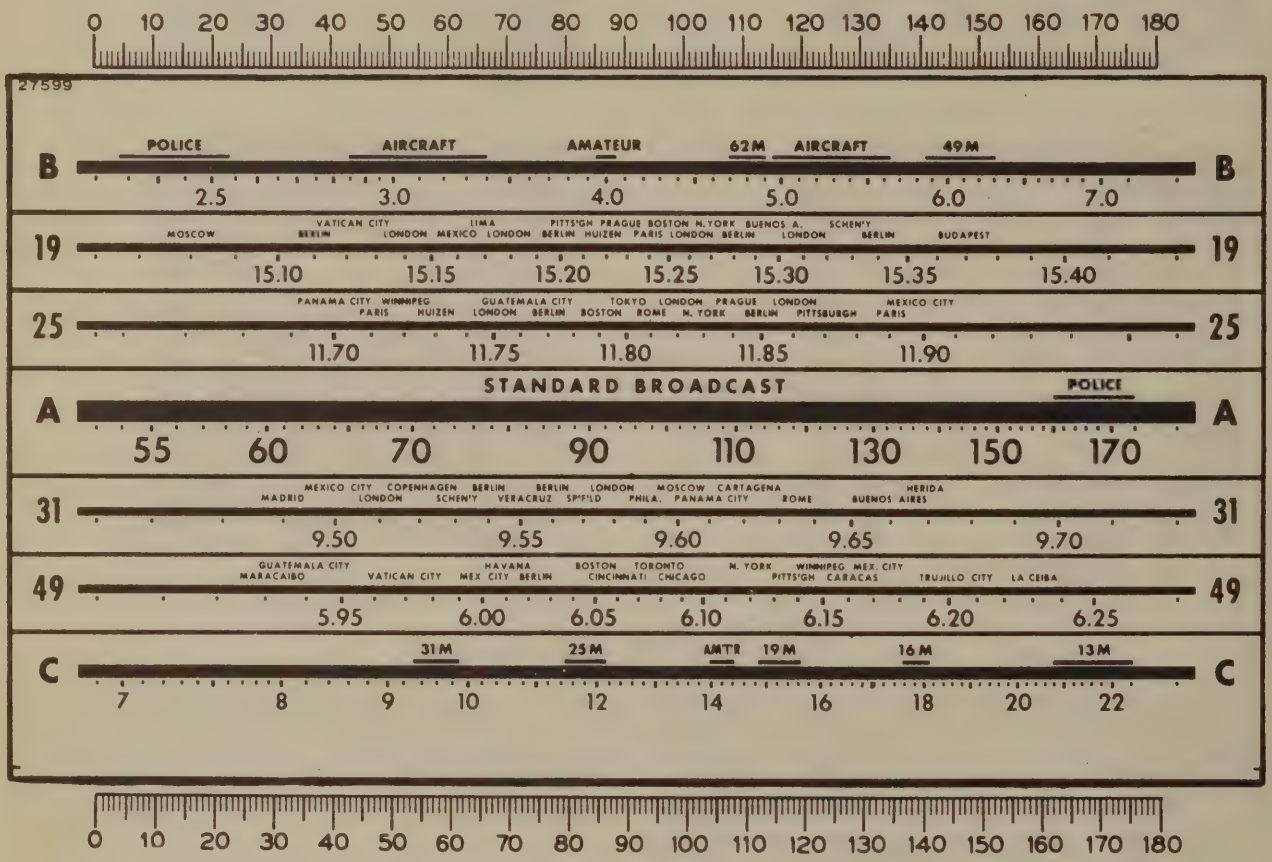
11. R-103 and R-102 should be dressed away from each other.

## HF-6, HF-8, U-132, U-134

**A. F. C. Alignment.**—After receiver has been fully aligned, turn Fidelity control to No. 1 position, tune in a station of medium signal strength in the neighborhood of 550-650 kc, or, if it is necessary to use a local station for this signal, cut down length of antenna so that signal is about medium strength. Carefully tune in the station using the "Magic Eye" as an indicator. Tune test oscillator to 455 kc, turn output to maximum, and "Modulation" off. Connect "Gnd" side of test oscillator to chassis, and bring the lead from the high side of test oscillator near the grid lead of 1st detector, 6L7 tube, until a beat note can be heard in the loudspeaker. Do not bring lead any closer than 1 inch to grid lead of 6L7, or detuning of circuit will result, and the adjustment will not be accurate.

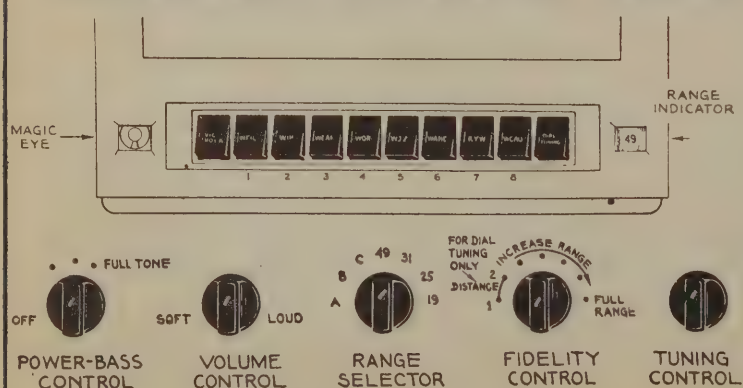
Adjust frequency of test oscillator till beat-note heard in loudspeaker is at zero-beat. Turn Fidelity control to No. 3 position, and a beat note will again be heard. Adjust trimmer, L32, bottom of 4th i-f transformer, till beat note heard is again at zero-beat. Turn Fidelity control to No. 1 position, and check for zero-beat. When properly adjusted turning Fidelity control from No. 1 to No. 3 position should not affect zero-beat.

With Fidelity control in No. 1 position, tune receiver off resonance. Turn Fidelity control to No. 3 position—station should "fall" into resonance due to A. F. C. action. Push in Tuning Control Shaft without turning it—station should again be off resonance as originally tuned.




*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Scale*

# ADJUSTMENTS FOR ELECTRIC TUNING




*Location of Controls*

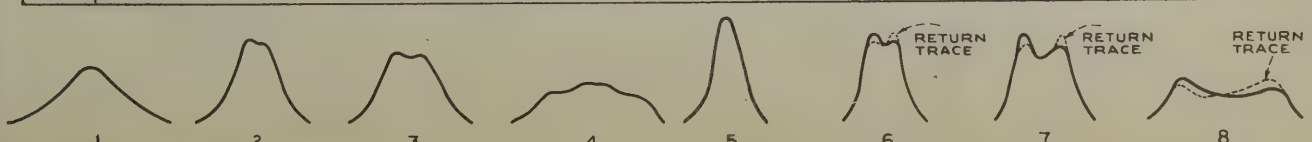
The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Turn Fidelity Control maximum counter-clockwise.
4. Press down the "dial-tuning" (right hand) button.
5. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
6. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down, central dial lamp will light brightly or dully, depending on which side of disc, the contact is. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
7. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
8. Repeat this process for the remaining stations.

# Alignment Table

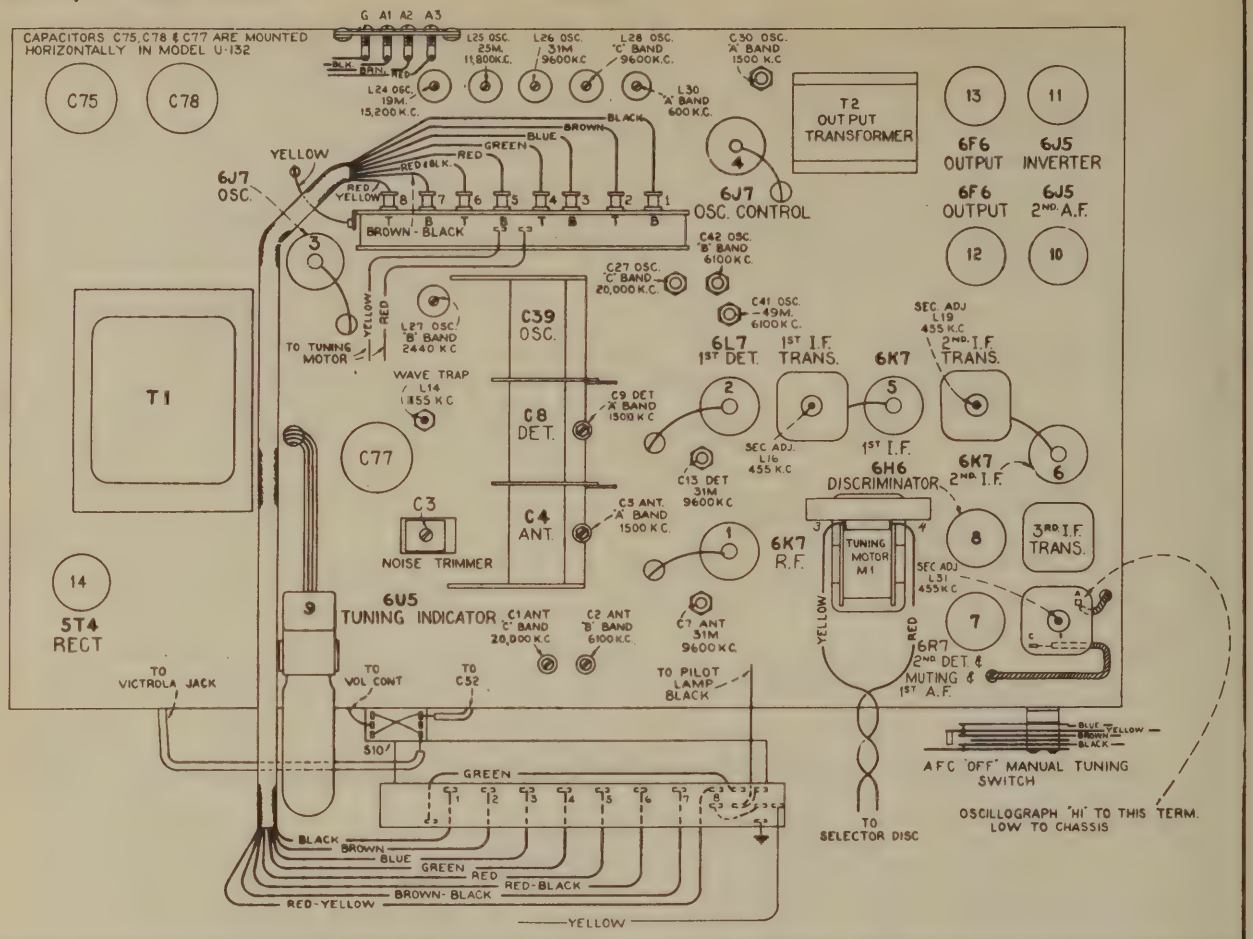
| Step | Connect High Side of Test Oscillator to— | Tune Test Oscillator to— | Range Selector | Set Tuning Gang to— | Adjust following for maximum peak output | Check for Selectivity Curve No. |
|---|---|---|---|---|---|---|
| 1 | Turn fidelity switch to maximum counter-clockwise (No. 1) position. | | | | | |
| 2 | 6K7 2nd I-F Grid Cap in series with .01 mfd. | 455 KC | "A" | Quiet Point Between 550 and 750 KC | L21 3rd I-F Trans. L31-L32 4th I-F Trans. | 1 |
| 3 | 6K7 1st I-F Grid Cap in series with .01 mfd. | 455 KC | "A" | | L18, L19 2nd I-F Trans. | 2 |
| 4 | 6K7 1st I-F Grid Cap in series with .01 mfd. | 455 KC | "A" | | Turn Fidelity Control Clockwise to No. 6 position | 3 |
| | | | | | Turn Fidelity Control Clockwise to No. 7 position | 4 |
| 5 | Turn Fidelity Control to maximum counter-clockwise (No. 1) position. | | | | | |
| 6 | 6L7 1st Det. Grid in series with 300 ohms *Remove Grid Lead* | 455 KC | "A" | Quiet Point Between 550 and 750 KC | L15, L16, 1st I-F Trans. | 5 |
| 7 | 6L7 1st Det. Grid in series with 300 ohms | 455 KC | 'A" | | Turn Fidelity Control Clockwise to No. 5 position | 6 |
| | | | | | Turn Fidelity Switch Clockwise to position No. 6 | 7 |
| | | | | | Turn Fidelity Switch Clockwise to position No. 7 | 8 |
| 8 | Turn Fidelity Control to maximum counter-clockwise (No. 1) position. | | | | | |
| 9 | A2 in series with 100 mmf, A1 to Gnd. | 600 KC | "A" | 600 KC 29° | L30, osc. | |
| 10 | A2 in series with 100 mmf, A1 to Gnd. | 1,500 KC | "A" | 1,500 KC 152.5° | C30, osc.; C5, ant.; C9, det. | |
| 11 | A2 in series with 100 mmf, A1 to Gnd. | 455 KC | "A" | 600 KC 29° | L14, wave trap *Minimum output* | |
| 12 | A2 in series with 100 mmf, A1 to Gnd. | 6,100 KC | "B" | 6,100 KC 147° | C42, osc.; C2, ant. | |
| 13 | A2 in series with 100 mmf, A1 to Gnd. | 2,440 KC | "B" | 2,440 KC 15° | L27, osc. | |
| 14 | A2 in series with 100 mmf, A1 to Gnd. | 6,100 KC | "B" | 6,100 KC 147° | C42 | |
| 15 | A2 in series with 47 ohms, A3 to Gnd. | 20,000 KC | "C" | 20,000 KC 156° | C27, osc.; C1, ant. | |
| 16 | A2 in series with 47 ohms, A3 to Gnd. | 9,600 KC | "C" | 9,600 KC 57° | L28, osc. | |
| 17 | A2 in series with 47 ohms, A3 to Gnd. | 20,000 KC | "C" | 20,000 KC 156° | C27, osc. | |
| 18 | A2 in series with 47 ohms, A3 to Gnd. | 9,600 KC | "31M" | 9,600 KC 99° | L26, osc.; C7, ant.; C13, det. | |
| 19* | A2 in series with 47 ohms, A3 to Gnd. | 6,100 KC | "49M" | 6,100 KC 103° | C41, osc. | |
| 20 | A2 in series with 47 ohms, A3 to Gnd. | 11,800 KC | "25M" | 11,800 KC 90° | L25, osc. | |
| 21 | A2 in series with 47 ohms, A3 to Gnd. | 15,200 KC | "19M" | 15,200 KC 79° | L24, osc. | |
| 22 | Proceed to A.F.C. discriminator adjustments. | | | | | |

*NOTE: In Step 19 only, oscillator tracks on low side of signal; use maximum inductance peak (plunger in) if two peaks can be obtained. All other oscillator trimmers use minimum, inductance or capacity peak (plunger out), if two peaks can be obtained.

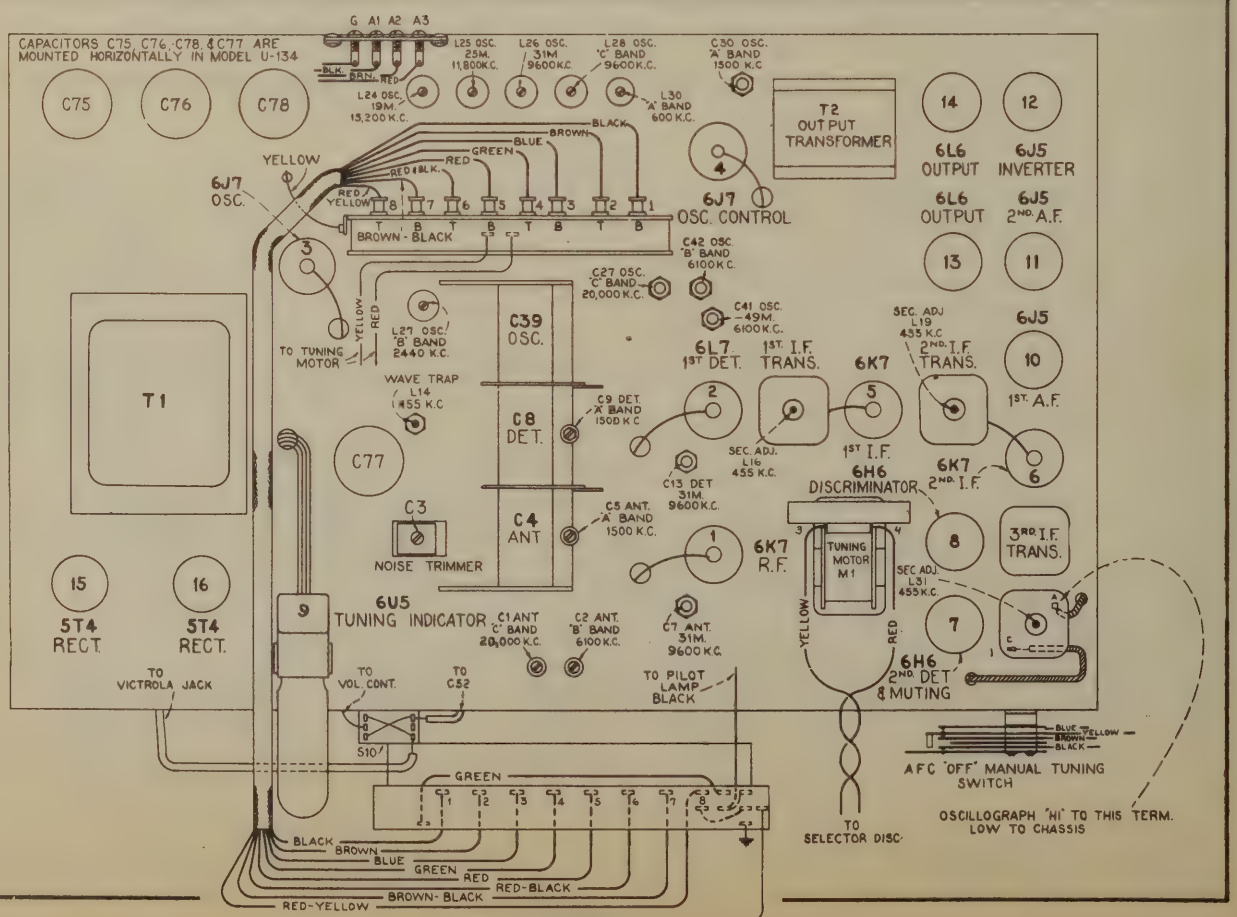



*I-F Selectivity Curves*

# HF-6, HF-8, U-132, U-134




*Top View—Models HF-6, U-132*




*Top View—Models HF-8, U-134*

# Miscellaneous Service Data

## Antenna Connections

**RCA Victor Master Antenna Kit.**—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

**Noise-Reducing Adjustment.**—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C3 to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C3 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

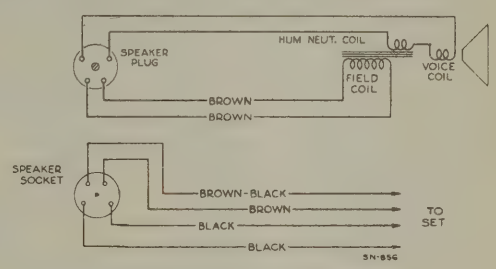
**This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer should be screwed all the way down.**

**Other Antennas.**—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

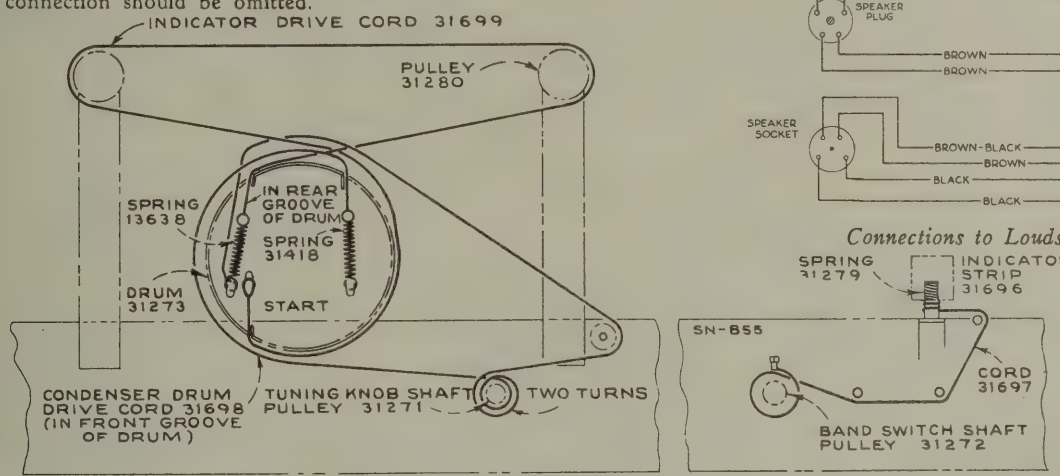
**Loudspeaker.**—No attempt should be made to remove the aluminum cone cap of the loudspeaker cone. This is securely cemented to the cone, and any attempt to remove it may result in serious damage to the cone assembly. The cone must be centered by moving the cone in and out and getting the "feel" of the cone to find where it is rubbing against the pole pieces. The two screws holding the spider support are accessible from the rear of the speaker. By loosening these screws and moving the cone by hand, it is possible to center the cone satisfactorily. Another method, which may be used, is to connect speaker to receiver, feed a low frequency note of from 40-60 cycles into the audio input of the set, and turning up the volume control — move the spider support until no rattle is heard in speaker, with about 10 watts output. Replacement cones will have to be centered in the same manner, as the cone will be supplied with cone cap fastened securely in position.

*NOTE.—Due to inverse feedback used on these models, it is very important to connect output transformers exactly as shown in the schematic diagram.*

**Victrola Attachment.**—A jack located on one side of the chassis is provided for connecting a Victrola Attachment into the audio-amplifying circuit on Models HF-6 and HF-8. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.




*Connections to Loudspeaker*




*Details of Tuning Mechanism Models HF-8, U-132, U-134*

Note: Tuning Mechanism of Model HF-6 is similar to this shown, except Indicator drive cord is Stock No. 31281.

## MODELS HF-6, HF-8, U-132, AND U-134

### A.V.C. Timing on Short Wave:

In some localities, the fading of short wave signals has a very "rapid" or "abrupt" characteristic which becomes apparent as a "barking" effect in the reproduction of the program. Where this condition is noted, it is recommended that the speed of the AVC circuits be increased by changing the value of capacitor C-70 from .05 mfd to .01 mfd. Further improvement may possibly be obtained by the use of two antennas, spaced as far as possible from each other, erected in different directions, and connected multiple at the receiver.

## MODEL U-132

### Dismounting Speaker:

Unless the following specified procedure is used in attempting to remove the speaker from the cabinet, some trouble may be encountered and abnormal time required:

(a) Remove two chassis mounting bolts from bottom cross rail.
(b) Remove two cross rail mounting bolts and lift out cross rail entirely.
(c) Remove four speaker mounting screws. Hole is provided in angular shelf for the removal of top screw.
(d) Place yoke of speaker in cutout at lower edge of angular shelf, tilt speaker forward and lift out.

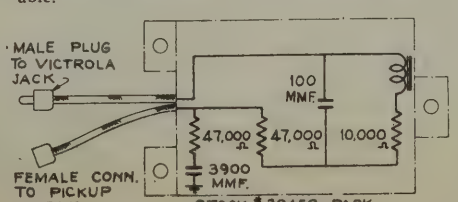
### Radio Interference on Phono:

Where crosstalk from a strong local station occurs during phonograph reproduction, a remedy may be effected by one or more of the following: (1) Replace 6R7 tube, (2) check Victrola switch contacts, and (3) shield grid lead of 6R7 under chassis, extending shield as closely as possible to C-55.

## MODELS U-132 AND U-134

### Phonograph Fidelity Revision:

More "brilliance" can be provided on record reproduction by use of a special phonograph input circuit. A complete compensation pack (Stock No. 32452) including such a circuit encased and shielded, is therefore, being made available for use where it is considered desirable.




*Phonograph Compensation Pack for Models U-132 and U-134.*

INSTALLATION.—Locate pack on chassis mounting panel 5 inches to right and 1 inch above bottom edge. Connect between pickup cable and "Victrola" jack on chassis. Disconnect resistors R-101, R-102, R-103, and capacitor C-104 from circuit. See that capacitor C-105 connects directly to "Victrola" jack.

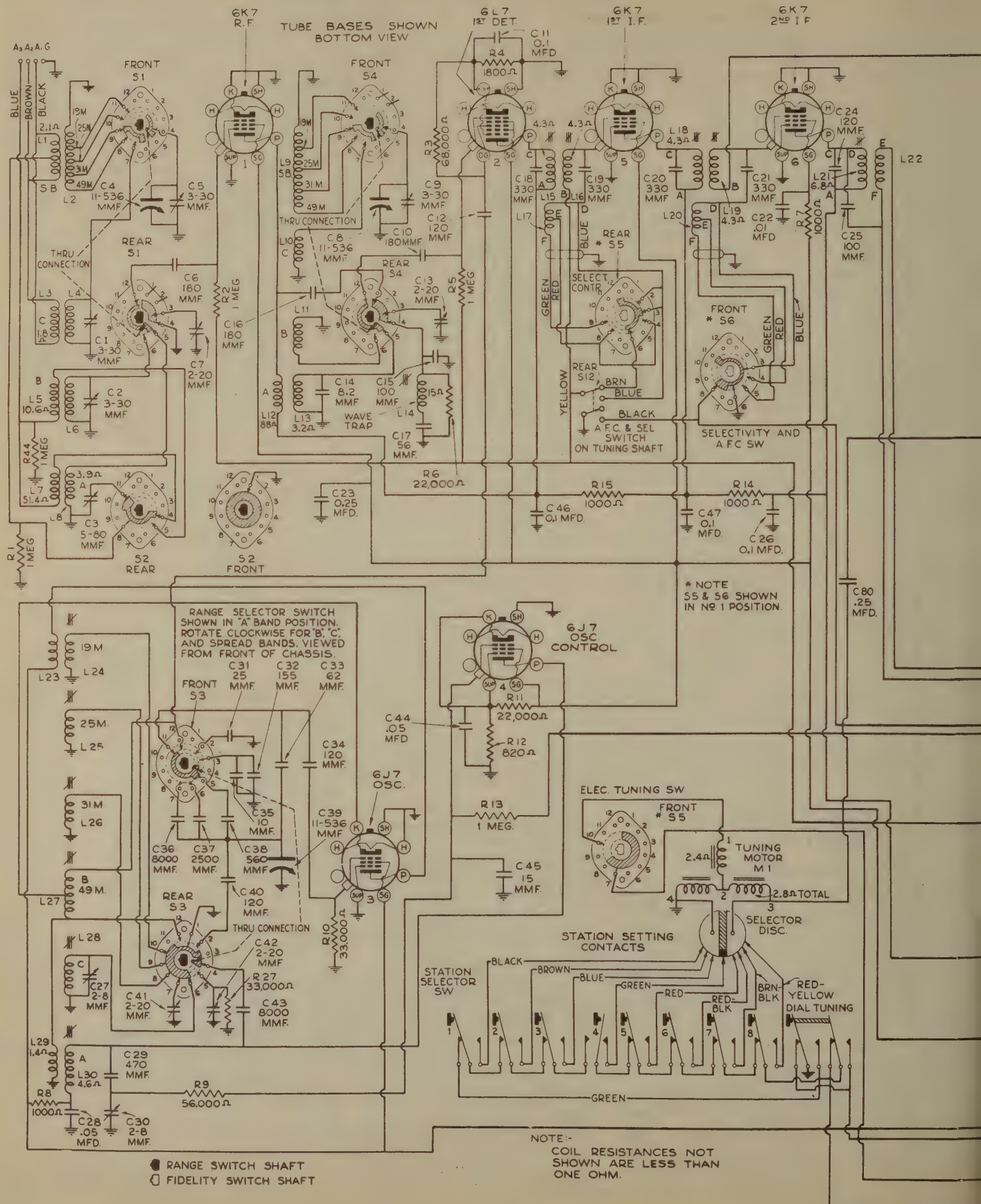
### Replacement Crystal Pickup:

Replacement crystal pickup for these two instruments should be ordered as Stock No. 32632. This part is now specified in place of the original Stock No. 31156.

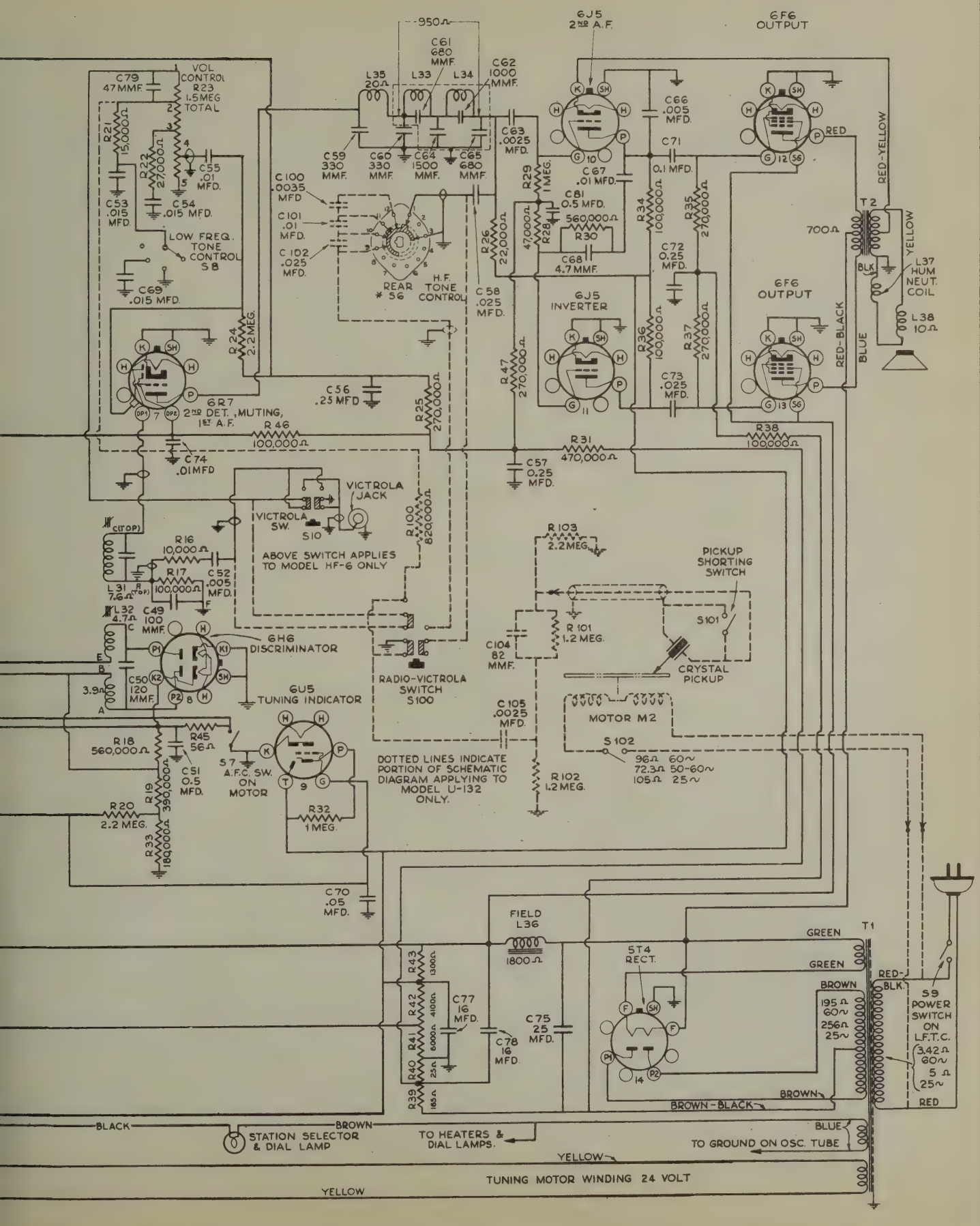
## MODEL U-134

### Needle Scratch:

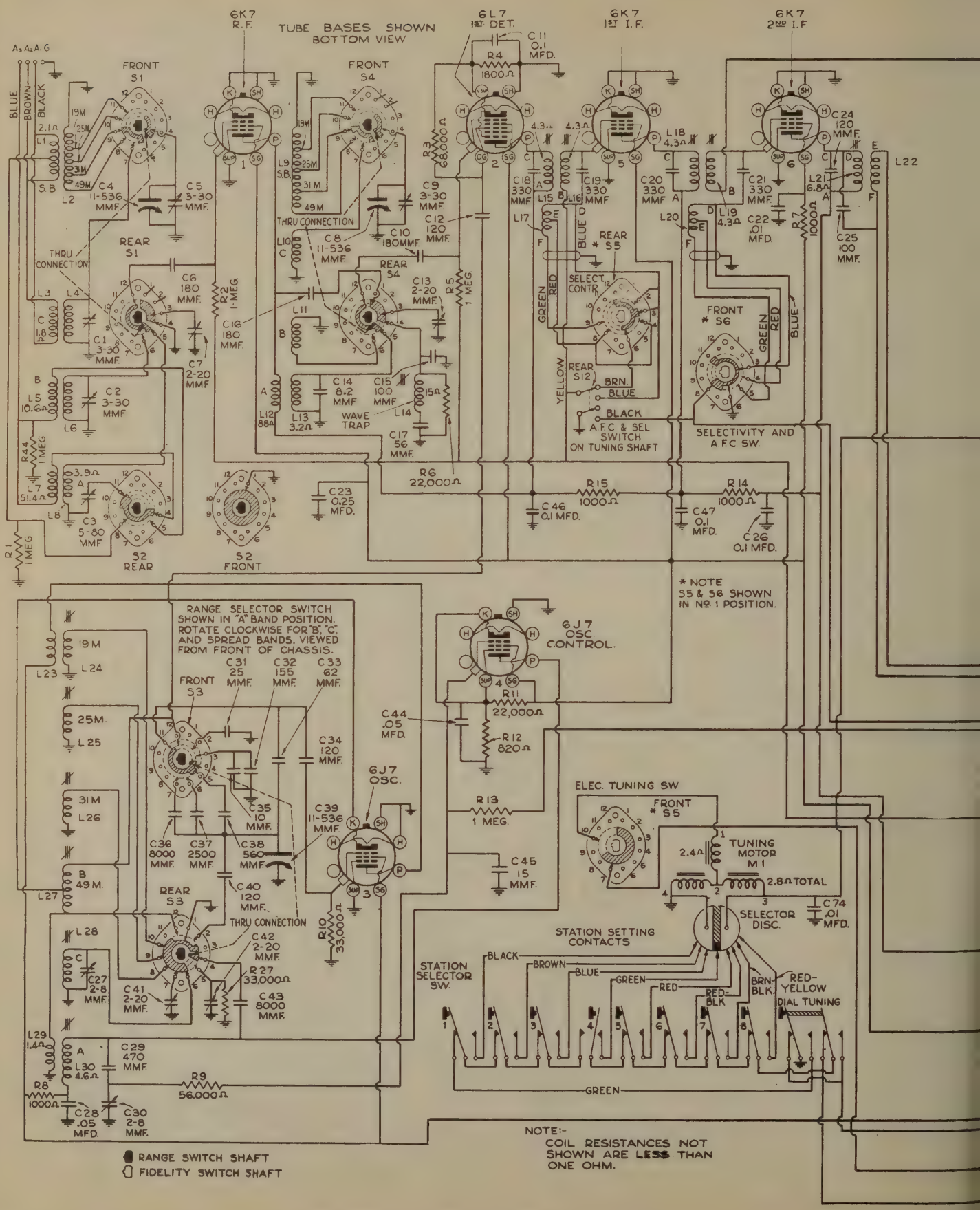
Capacitor C-102, .025 mfd., associated with the H-F Tone control switch may be of the wrong value, in some cases, and "needle scratch" on phonograph reproduction will be excessive. Use of the new "Red Seal" needles will contribute appreciably to reduction of "needle scratch."




*Schematic Circuit Diagram—Models HF-6, U-132*

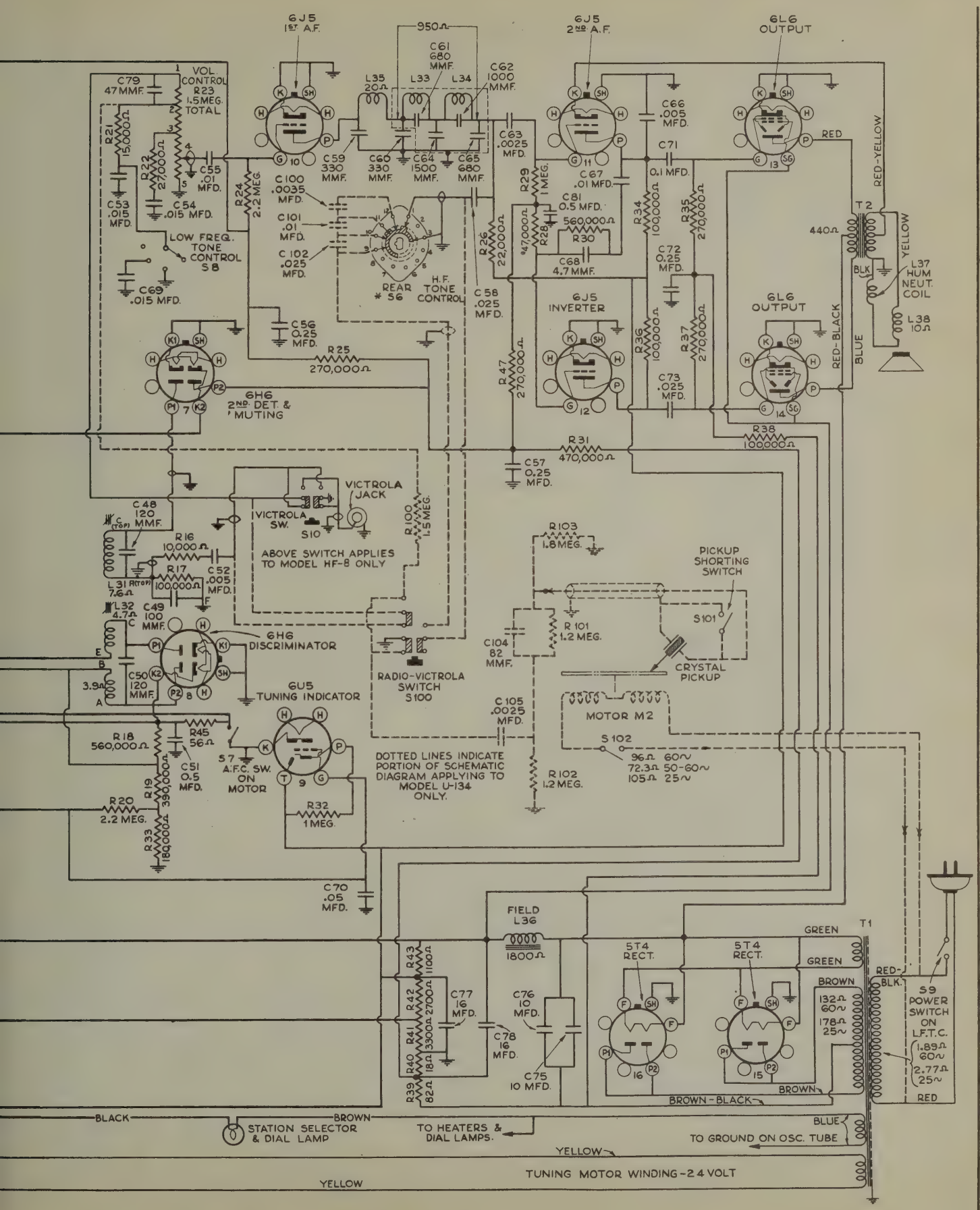

6J5 2ND A.F.
6F6 OUTPUT
950Ω
C61 680 MMF.
C62 1000 MMF.
L35 20Ω
L33
L34
C59 330 MMF.
C60 330 MMF.
C64 1500 MMF.
C65 680 MMF.
C63 .0025 MFD.
C66 .005 MFD.
C71 0.1 MFD.
C67 .01 MFD.
C81 0.5 MFD.
560,000Ω
R30
C68 4.7 MMF.
R29 1 MEG.
R28 47,000Ω
R26 22,000Ω
R34 100,000Ω
R35 270,000Ω
C72 0.25 MFD.
C73 .025 MFD.
R36 100,000Ω
R37 270,000Ω
R47 270,000Ω
C58 .025 MFD.
C100 .0035 MFD
C101 .01 MFD.
C102 .025 MFD.
REAR * S6
H.F. TONE CONTROL
VOL CONTROL R23 1.5 MEG TOTAL
C79 47 MMF.
R21 15,000Ω
R22 27,000Ω
C55 .01 MFD.
C53 .015 MFD.
C54 .015 MFD.
LOW FREQ. TONE CONTROL S8
C69 .015 MFD.
R24 2.2 MEG.
6R7 2ND DET., MUTING, 1ST A.F.
C56 .25 MFD
R25 270,000Ω
R46 100,000Ω
C74 .01 MFD
6J5 INVERTER
R31 470,000Ω
C57 0.25 MFD.
R38 100,000Ω
6F6 OUTPUT
T2
700Ω
RED
RED-YELLOW
YELLOW
BLK
L37 HUM NEUT. COIL
L38 10Ω
RED-BLACK
BLUE
VICTROLA JACK
VICTROLA SW. S10
ABOVE SWITCH APPLIES TO MODEL HF-6 ONLY
R100 820,000Ω
R16 10,000Ω
R17 100,000Ω
C52 .005 MFD.
L31 7.6Ω
L32 4.7Ω
C49 100 MMF.
6H6 DISCRIMINATOR
C50 120 MMF.
3.9Ω
6U5 TUNING INDICATOR
R103 2.2MEG.
PICKUP SHORTING SWITCH
S101
R101 1.2 MEG.
C104 82 MMF.
CRYSTAL PICKUP
RADIO-VICTROLA SWITCH S100
C105 .0025 MFD.
MOTOR M2
S102
96Ω 60~
72.3Ω 50-60~
105Ω 25~
R102 1.2 MEG.
DOTTED LINES INDICATE PORTION OF SCHEMATIC DIAGRAM APPLYING TO MODEL U-132 ONLY.
R18 560,000Ω
R45 56Ω
C51 0.5 MFD.
S7 A.F.C. SW. ON MOTOR
R19 390,000Ω
R20 2.2 MEG.
R33 180,000Ω
R32 1 MEG.
C70 .05 MFD.
FIELD L36
1800Ω
R43 1300Ω
R42 4100Ω
R41 6000Ω
R40 23Ω
R39 165Ω
C77 16 MFD.
C78 16 MFD.
C75 25 MFD.
5T4 RECT.
GREEN
GREEN
BROWN
195Ω 60~
256Ω 25~
RED-BLK.
S9 POWER SWITCH ON L.F.T.C.
3.42Ω 60~
5Ω 25~
RED
BROWN
BROWN-BLACK
BLACK
STATION SELECTOR & DIAL LAMP
BROWN
TO HEATERS & DIAL LAMPS.
BLUE
TO GROUND ON OSC. TUBE
YELLOW
TUNING MOTOR WINDING 24 VOLT
YELLOW

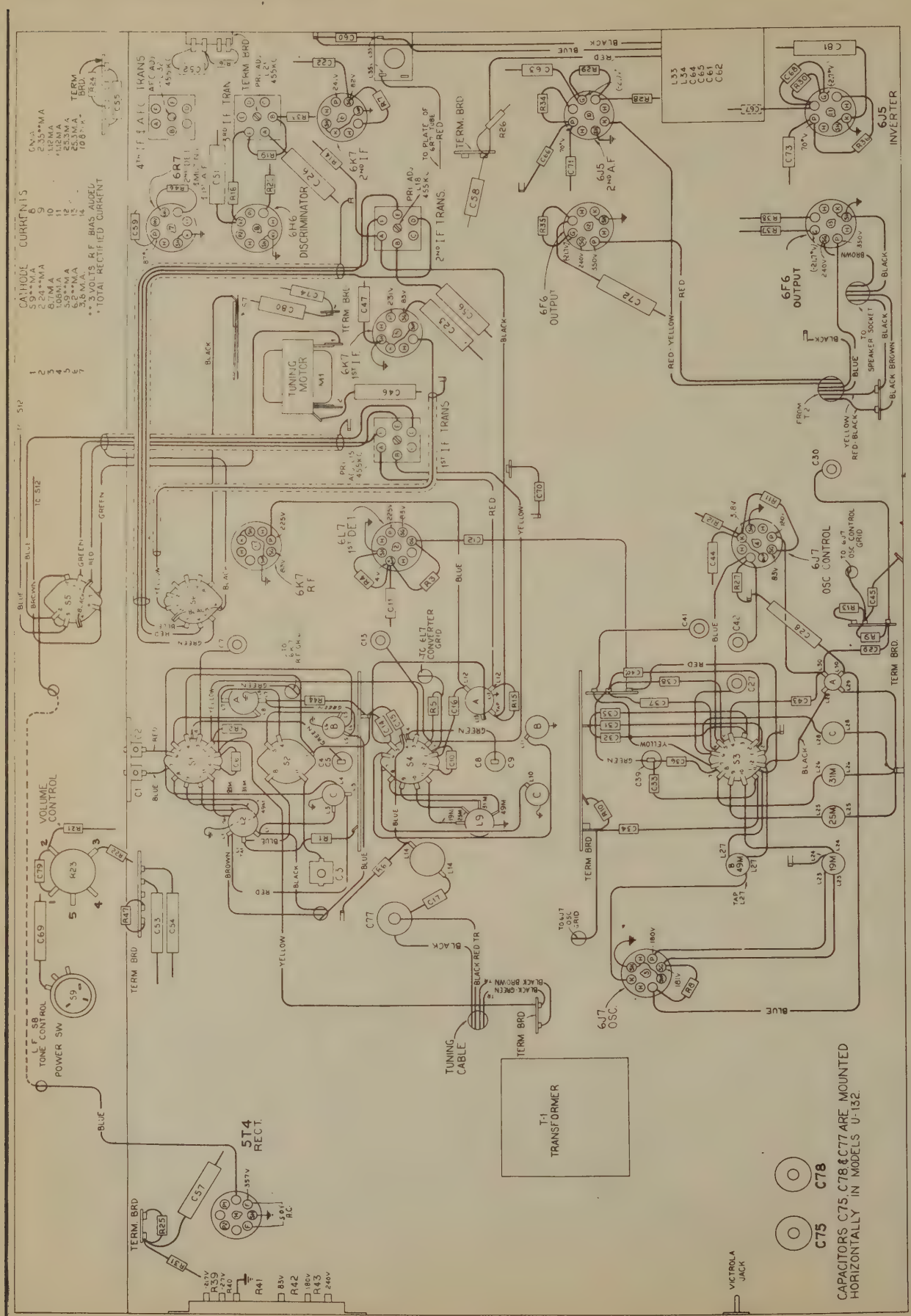
# HF-6, HF-8, U-132, U-134




*Schematic Circuit Diagram—Models HF-8, U-134*

# HF-6, HF-8, U-132, U-134

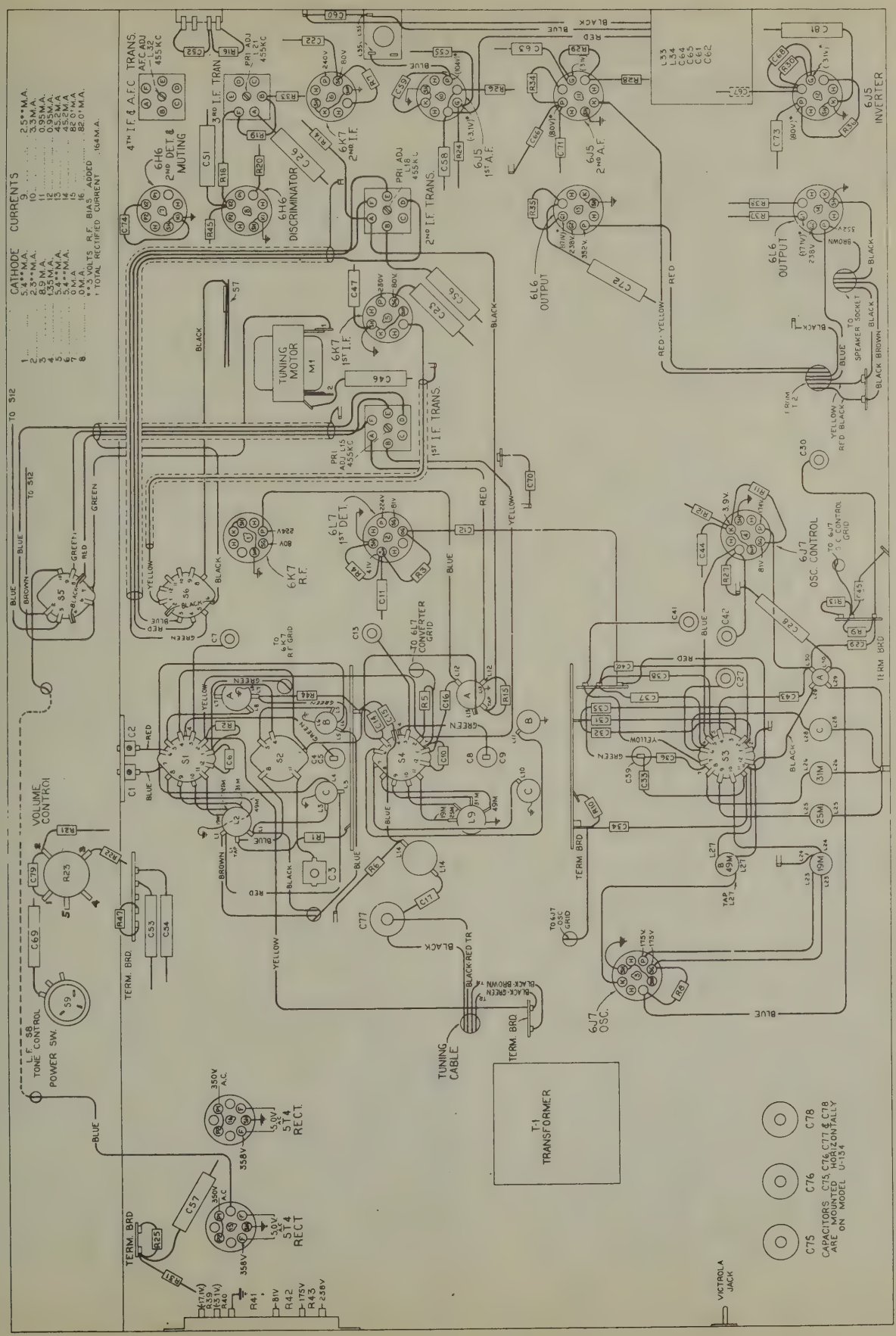





*R-F Wiring, Parts Location and Socket Voltage Diagram—Models HF-6, U-132*

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*** NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.




*R-F Wiring, Parts Location and Socket Voltage Diagram—Models HF-8, U-134*

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

**NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

**Additional Replacement Part:**

Stock No.
31566 Pull—Cabinet door pull

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | RECEIVER ASSEMBLIES |
| 31492 | Bearing—Variable condenser motor rotor adjustment bearing—less bracket and cup assembly—Models U-132 and U-134 only |
| 31253 | Board—Antenna-ground terminal board—Models HF-6 and HF-8 only |
| 31752 | Board—Antenna-ground terminal board—Models U-132 and U-134 only |
| 31276 | Bracket—Band indicator mounting bracket—less band indicating strip, cord, and tension spring |
| 31491 | Bracket—Bracket and bearing cup for variable condenser motor rotor adjustment — Models U-132 and U-134 only |
| 31282 | Bracket—"Magic Eye" bracket and clip |
| 31712 | Cable—3-conductor shielded fidelity switch cable. |
| 31711 | Cable—4-conductor shielded fidelity switch cable. |
| 31710 | Cable—Low capacity phono. cable |
| 31715 | Cable—Push-button switch-to-selector contacts cable |
| 30766 | Cap—Shield cap for "Magic Eye" |
| 12607 | Cap—Top shield cap for first, second, or fourth i-f transformer |
| 12807 | Capacitor—Adjustable trimmer, 2-8 mmfd. (C27, C30) |
| 12884 | Capacitor—Adjustable trimmer, 2-20 mmfd. (C7, C13, C41, C42) |
| 31292 | Capacitor—Dual adjustable trimmer, 3-30 mmfd. each section (C1, C2) |
| 14392 | Capacitor—4.7 mmfd. (C68) |
| 31252 | Capacitor—Adjustable trimmer, 5-80 mmfd. (C3) |
| 13001 | Capacitor—8.2 mmfd. (C14) |
| 31709 | Capacitor—10 mmfd. (C35) |
| 12896 | Capacitor—15 mmfd. (C45) |
| 31707 | Capacitor—25 mmfd. (C31) |
| 13141 | Capacitor—47 mmfd. (C79) |
| 12723 | Capacitor—56 mmfd. (C17) |
| 31705 | Capacitor—62 mmfd. (C33) |
| 12813 | Capacitor—82 mmfd. (C104) — Models U-132 and U-134 only |
| 31270 | Capacitor—100 mmfd. (C25, C49) |
| 12720 | Capacitor—100 mmfd. (C15) |
| 31706 | Capacitor—120 mmfd. (C40) |
| 12724 | Capacitor—120 mmfd. (C12, C34) |
| 31757 | Capacitor—120 mmfd. (C24, C48, C50) |
| 31708 | Capacitor—155 mmfd. (C32) |
| 13003 | Capacitor—180 mmfd. (C6, C10, C16) |
| 12952 | Capacitor—330 mmfd. (C59, C60) |
| 31756 | Capacitor—330 mmfd. (C18, C19, C20, C21). |
| 30433 | Capacitor—470 mmfd. (C29) |
| 31702 | Capacitor—560 mmfd. (C38) |
| 31703 | Capacitor—2,500 mmfd. (C37) |
| 31704 | Capacitor—8,000 mmfd. (C36, C43) |
| 5107 | Capacitor—.0025 mfd. (C63, C105)—C105 in Models U-132 and U-134 only |
| 30303 | Capacitor—.0035 mfd. (C100)—Models U-132 and U-134 only |
| 4838 | Capacitor—.005 mfd. (C52, C56) |
| 14393 | Capacitor—.01 mfd. (C22, C55, C67, C74, C101)—C101 in Models U-132 and U-134 only |
| 11315 | Capacitor—.015 mfd. (C53, C54, C69) |
| 30938 | Capacitor—.025 mfd. (C58, C73, C102)—C102 in Models U-132 and U-134 only |
| 4886 | Capacitor—.05 mfd. (C28) |
| 30882 | Capacitor—.05 mfd. (C44, C70) |
| 4839 | Capacitor—0.1 mfd. (C26, C46, C11, C47) |
| 30899 | Capacitor—0.1 mfd. (C71) |
| 30965 | Capacitor—0.25 mfd. (C56, C72, C23, C57, C80)—C80 used in Models HF-6 and U-132 only |
| 31701 | Capacitor—0.5 mfd. (C51, C81) |
| 11203 | Capacitor—10 mfd. (C75, C76)—Models HF-8 and U-134 only |
| 14377 | Capacitor—16 mfd. (C77) |
| 5212 | Capacitor—16 mfd. (C78)—Models HF-6 and HF-8 only |
| 31751 | Capacitor—16 mfd. (C78)—Models U-132 and U-134 only |
| 14531 | Capacitor—25 mfd. (C75)—Model HF-6 only. |
| 31753 | Capacitor—25 mfd. (C75)—Model U-132 only. |
| 31544 | Clutch—Variable condenser drive gear clutch and pinion gear—for 25-cycle models only |
| 31237 | Clutch—Variable condenser drive gear clutch and pinion gear—for 50/60-cycle models only |
| 31669 | Coil—"A" band antenna coil (L7, L8) |
| 31689 | Coil—"A" band oscillator coil (L29, L30) |
| 31672 | Coil—"A" band r-f coil (L12, L13) |
| 31670 | Coil—"B" band antenna coil (L5, L6) |
| 31690 | Coil—"B" and 49-meter band oscillator coil (L27) |
| 14952 | Coil—"B" band r-f coil (L11) |
| 31671 | Coil—"C" band antenna coil (L3, L4) |
| 31255 | Coil—"C" or 31-meter band oscillator coil (L26, L28) |
| 14953 | Coil—"C" band r-f coil (L10) |
| 12819 | Coil—Choke coil (L35) |
| 31688 | Coil—19-meter band oscillator coil (L23, L24). |
| 31254 | Coil—25-meter band oscillator coil (L25) |
| 31673 | Coil—49-, 31-, 25-, and 19-meter bands antenna coil (L1, L2) |
| 14954 | Coil—49-, 31-, 25-, and 19-meter bands r-f. coil (L9) |
| 31676 | Condenser—3-gang variable (C4, C5, C8, C9, C39) |
| 31231 | Contact—Contact tip for selector plunger |
| 31345 | Contact—Push-button switch contacts, comprising 10-contacts riveted on insulating strip |
| 31344 | Contact—Push-button switch contacts, comprising 13-contacts riveted on insulating strip |
| 31697 | Cord—Band indicator drive cord |
| 31281 | Cord—Pointer drive cord—Model HF-6 only. |
| 31699 | Cord—Pointer drive cord—Models HF-8, U-132 and U-134 only |
| 31698 | Cord—Variable condenser drive cord |
| 31273 | Drum—Variable condenser drive cord drum |
| 31686 | Filter—10-kc filter (L33, L34, C61, C62, C64, C65) |
| 31240 | Flywheel—Variable condenser drive motor flywheel |
| 31239 | Gear—Variable condenser knob shaft drive gear and hub |
| 31545 | Gear—Variable condenser intermediate drive gear and pinion gear—for 25-cycle models only |
| 31238 | Gear—Variable condenser intermediate drive gear and pinion gear—for 50/60-cycle models only |
| 31696 | Indicator—Band indicator strip |
| 31480 | Lamp—Electric Tuning adjustment indicator lamp |
| 11891 | Lamp—Dial lamp |
| 31243 | Leather—Friction leather for flywheel |
| 31346 | Lock Plate — Push-button switch lock plate, comprising 10-contact locks in one strip |
| 31246 | Motor—Variable condenser drive motor—for 25-cycle models only (M1) |
| 31235 | Motor—Variable condenser drive motor — for 50/60-cycle models only (M1) |
| 12471 | Plate—Mounting plate and rubber for cushion socket—less socket |
| 31227 | Plate—Selector mounting plate and spacers—mounts on rear of variable condenser |
| 31228 | Plate—Selector contact plate—less plungers |
| 30868 | Plug—2-contact female plug for motor power cable—Models U-132 and U-134 only |
| 5040 | Plug—4-contact female plug for speaker cable. |
| 14697 | Pulley—Variable condenser drive cord intermediate pulley |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 31272 | Pulley—Range switch shaft pulley |
| 31271 | Pulley—Station selector knob shaft pulley |
| 31693 | Resistor—Voltage divider, comprising one 82-ohm, one 18-ohm, one 3,300-ohm, one 2,700-ohm, one 1,100-ohm sections (R39, R40, R41, R42, R43)—Models HF-8 and U-134 only |
| 31694 | Resistor—Voltage divider, comprising one 165-ohm, one 25-ohm, one 6,000-ohm, one 4,100-ohm, and one 1,300-ohm sections (R39, R40, R41, R42, R43)—Models HF-6 and U-132 only |
| 13220 | Resistor—56 ohms, ½ watt (R45) |
| 14076 | Resistor—820 ohms, ½ watt (R12) |
| 14720 | Resistor—1,000 ohms, ½ watt (R7, R8, R14, R15) |
| 12194 | Resistor—1,800 ohms, ½ watt (R4) |
| 14559 | Resistor—10,000 ohms, ½ watt (R16) |
| 12695 | Resistor—15,000 ohms, ½ watt (R21) |
| 13998 | Resistor—22,000 ohms, ½ watt (R6) |
| 30492 | Resistor—22,000 ohms, ½ watt (R11, R26) |
| 12738 | Resistor—27,000 ohms, ½ watt (R22) |
| 12454 | Resistor—33,000 ohms, ½ watt (R10, R27) |
| 12412 | Resistor—47,000 ohms, ½ watt (R28) |
| 12286 | Resistor—56,000 ohms, ½ watt (R9) |
| 13715 | Resistor—68,000 ohms, ½ watt (R3) |
| 14560 | Resistor—100,000 ohms, ½ watt (R17, R34, R36, R38, R46)—R46 used in Models HF-6 and U-132 only |
| 13698 | Resistor—180,000 ohms, ½ watt (R33) |
| 12199 | Resistor—270,000 ohms, ½ watt (R25, R35, R37, R47) |
| 13479 | Resistor—390,000 ohms, ½ watt (R19) |
| 12285 | Resistor—470,000 ohms, ½ watt (R31) |

# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 12486 | Resistor—560,000 ohms, ½ watt (R18, R30) |
| 30963 | Resistor—820,000 ohms, ½ watt (R100)—Model U-132 only |
| 12013 | Resistor—1 meg., 1/10 watt (R32) |
| 13730 | Resistor—1 meg., ½ watt (R1, R2, R5, R13, R29, R44) |
| 5028 | Resistor—1.8 meg., ½ watt (R103)—Model U-134 only |
| 12201 | Resistor—1.5 meg., ½ watt (R100)—Model U-134 only |
| 30208 | Resistor—1.2 meg., ½ watt (R101, R102)—Models U-132 and U-134 only |
| 12679 | Resistor—2.2 meg., ½ watt (R20, R24, R103)—R103 in Model U-132 only |
| 14887 | Retainer—Pointer drive cord pully retainer |
| 31233 | Rotor—Selector rotor disc—mounts on rear of variable condenser shaft |
| 31241 | Screw—¼-20 x 3/16-in. headless, cone point set screw for flywheel |
| 14350 | Screw—No. 8-32 square head set screw for rotor, Stock No. 31233 |
| 5042 | Screw—No. 8-32 x ⅛-in. headless set screw for pulley, Stock No. 31271 |
| 4669 | Screw—No. 8-32 x ⅜-in. square head set screw for pulley, Stock No. 31272, and drum, Stock No. 31273 |
| 4119 | Screw—No. 8-32 x ¼-in. headless set screw for gear, Stock No. 31239 |
| 31681 | Shaft—Variable condenser drive knob shaft |
| 31364 | Socket—Dial lamp socket—Models HF-6 and HF-8 only |
| 31365 | Socket—Electric Tuning adjustment indicator lamp socket |
| 13871 | Socket—"Magic Eye" socket |
| 14278 | Socket—Phono. input socket |
| 31251 | Socket—Tube socket |
| 31232 | Spring—Contact tip spring for selector plunger |
| 13638 | Spring—Pointer drive cord tension spring |
| 31230 | Spring—Selector plunger body spring |
| 31279 | Spring—Tension spring for band indicator |
| 31970 | Spring—Tension spring for push-button switch latch bar |
| 31242 | Spring—Tension spring for flywheel |
| 31418 | Spring—Variable condenser drive cord tension spring |
| 31494 | Spring—Variable condenser motor rotor adjustment bearing spring for 25-cycle models only—Models U-132 and U-134 only |
| 31493 | Spring—Variable condenser motor rotor adjustment bearing spring for 50/60-cycle models only—Models U-132 and U-134 only |
| 31680 | Support—Variable condenser drive gear mounting support and studs |
| 31679 | Support—Variable condenser motor mounting support and studs—for 25-cycle models only |
| 31678 | Support—Variable condenser motor mounting support and studs—for 50/60-cycle models only |
| 31677 | Switch—Electric Tuning A.F.C. suppression switch (S7) |
| 31684 | Switch—Fidelity switch (S5, S6) |
| 31683 | Switch—L.f tone and power switch (S8, S9) |
| 31700 | Switch—Manual Tuning A.F.C. and selectivity switch (S12) |
| 31360 | Switch—Victrola switch for mounting on push-button switch assembly (S10)—Models HF-6 and HF-8 only |
| 31695 | Switch—Push-button switch and bracket complete—Models HF-6 and HF-8 only |
| 31754 | Switch—Push-button switch and bracket complete—Models U-132 and U-134 only |
| 31755 | Switch—Radio-Phono. switch for mounting on push-button switch assembly (S100)—Models U-132 and U-134 only |
| 31668 | Switch—Range switch only—less coils (S1, S2, S3, S4) |
| 31746 | Transformer—First i-f transformer (L15, L16, L17, C18, C19) |
| 31749 | Transformer—Second i-f transformer (L18, L19, L20, C20, C21) |
| 31747 | Transformer—Third i-f transformer (L21, L22, C24, C25) |
| 31748 | Transformer—Fourth i-f transformer (L31, L32, C48, C49, C50, R17) |
| 31687 | Transformer—Output transformer (T2)—Models HF-6 and U-132 only |
| 31685 | Transformer—Output transformer (T2)—Models HF-8 and U-134 only |
| 31885 | Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycle (T1)—Models HF-6 and U-132 only |
| 31884 | Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycle (T1)—Models HF-8 and U-134 only |
| 31692 | Transformer—Power transformer, 105-120 volts, 25-60 cycle (T1)—Models HF-6 and U-132 only |
| 31675 | Transformer—Power transformer, 105-120 volts, 25-60 cycle (T1)—Models HF-8 and U-134 only |
| 31691 | Transformer—Power transformer, 105-120 volts, 50-60 cycle (T1)—Models HF-6 and U-132 only |
| 31674 | Transformer—Power transformer, 105-120 volts, 50-60 cycle (T1)—Models HF-8 and U-134 only |
| 12654 | Trap—Wave trap (L14) |
| 31682 | Volume Control (R23) |

## SPEAKER ASSEMBLIES

Speaker RL76B-1

| | |
|---|---|
| 14604 | Coil—Hum neutralizing coil (L37) |
| 31723 | Coil—Speaker field coil (L36) |
| 31721 | Cone—Speaker cone and voice coil (L38) |
| 5039 | Plug—4-contact male plug for speaker |
| 14358 | Screw—Cap screw and washer to hold core |
| 31718 | Speaker complete |

## MISCELLANEOUS ASSEMBLIES

| | |
|---|---|
| 31358 | Button—Station selector push-button |
| 13103 | Cap—Pilot lamp cap (bullseye)—Models U-132 and U-134 only |
| 31286 | Carriage—Indicator pointer carriage and clip—Model HF-6 only |
| 31456 | Cover—Eight protective covers for push-button markers |
| 31540 | Cushion—Chassis mounting cushion and screw assemblies sufficient for one chassis—Models U-132 and U-134 only |
| 31541 | Cushion—Motor plate mounting cushion and clamp assembly sufficient for one instrument—Models U-132 and U-134 only |
| 31716 | Dial—Station selector dial scale and crystal—Model HF-6 only |
| 31719 | Dial—Station selector dial scale and crystal—Models HF-8, U-132 and U-134 only |
| 31362 | Escutcheon—Station selector dial escutcheon only—less dial, and push-buttons—Model HF-6 only |
| 31561 | Escutcheon—Station selector dial escutcheon only—less dial, and push-buttons—Models HF-8, U-132 and U-134 only |
| 4585 | Hinge—One pair cabinet door hinges (1 top, 1 bottom)—Model HF-8 only |
| 30698 | Hinge—Cabinet lid hinge—Models U-132 and U-134 only |
| 31759 | Hinge—Cabinet door hinges (1 upper and 1 lower)—Model U-134 only |
| 31564 | Holder—Needle card holder—Models U-132 and U-134 only |
| 31717 | Indicator—Station selector indicator pointer, carriage, and clip assembly—Models HF-8, U-132 and U-134 only |
| 31714 | Indicator—Station selector indicator pointer—Model HF-6 only |
| 31355 | Knob—Volume control, tone control, range switch, or fidelity switch knob |
| 31713 | Knob—Station selector knob |
| 11891 | Lamp—Pilot or compartment lamp—Models U-132 and U-134 only |
| 31458 | Marker—"Dial Tuning" push-button marker |
| 31457 | Marker—"Victrola" push-button marker |
| 31589 | Marker—Station call letter markers (1 set) |
| 31760 | Screen—Compartment lamp screen—Models U-132 and U-134 only |
| 31285 | Screen—Dial color screen and light diffuser—Model HF-6 only |
| 31559 | Screen—Dial color screen and light diffuser—Models HF-8, U-132 and U-134 only |
| 12993 | Screw—No. 8-32 x ⅜-in. headless set screw for knob, Stock No. 31713 |
| 31287 | Shaft—Slide shaft for indicator pointer carriage |
| 31364 | Socket—Pilot or compartment lamp socket—Models U-132 and U-134 only |
| 31558 | Spring—Indicator carriage bumper spring |
| 14270 | Spring—Retaining spring for knob, Stock No. 31355 |
| 31478 | Support—Cabinet lid support—Models U-132 and U-134 only |
| 31470 | Suspension—Motor board suspension springs, screw, and washer (4 required)—Models U-132 and U-134 only |

## ANTENNA ASSEMBLIES

| | |
|---|---|
| 31426 | Counterpoise Line—Additional length 60-ft. long |
| 12426 | Insulator—Strain and counterpoise insulator |
| 9816 | Transmission Line—Additional length 60-ft. long |

# Model 7Q4X (Chassis No. RC-502)

REFER TO MODEL 7Q4 FOR ALIGNMENT PROCEDURE

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "X" Band | 145-405 kc (2,069-740 m) |
| Standard Broadcast ("A") | 540-1,720 kc (555-174 m) |
| "B" Band | 2.3-7.0 mc (130-42.8 m) |
| "C" Band | 7.0-22.0 mc (42.8-13.6 m) |
| INTERMEDIATE FREQUENCY | 455 kc |

RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-12SK7 | R-F Amplifier |
| (2) RCA-12SA7 | 1st Detector, Oscillator |
| (3) RCA-12SK7 | I-F Amplifier |
| (4) RCA-12SQ7 | 2nd Detector, A.V.C., Audio Amplifier |
| (5) RCA-50L6GT | Output |
| (6) RCA-35Z5GT | Rectifier |
| (7) RCA-6N5 | Tuning Indicator |

Pilot Lamps (3) ..... Mazda No. 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

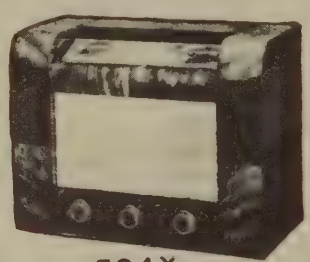
| | |
|---|---|
| 160-200 volts, 40-100 cycles | 60 watts |
| 160-200 volts, Direct Current | 60 watts |
| 210-250 volts, 40-100 cycles | 70 watts |
| 210-250 volts, Direct Current | 70 watts |

LOUDSPEAKER (RL-90-1)

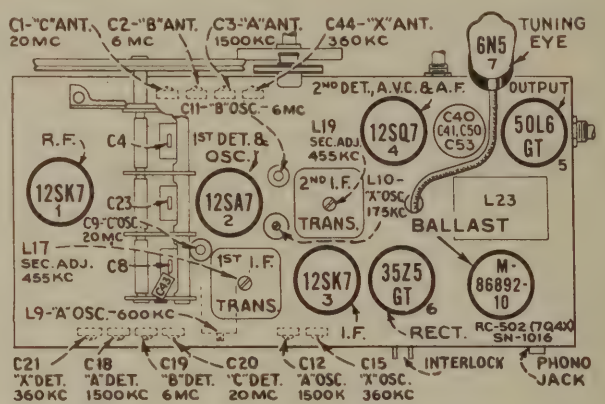
Type ..... 8-inch permanent magnet dynamic
Voice Coil Impedance ..... 2.6 ohms at 400 cycles

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 3.5 watts |
| Maximum | 4.5 watts |



7Q4X




**Caution!**

Before replacing ballast resistor, check rectifier and plate circuits to be sure that there are no shorts which would cause the ballast to burn out.

**Precautionary Lead Dress:**

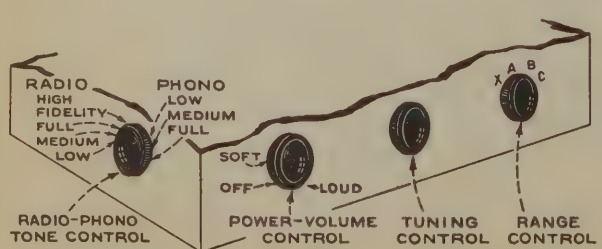
1. Dress the black diode lead running between the 12SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.

2. Dress the brown lead from terminal E on the 2nd I-F transformer to terminal 11 on S8 against the chassis.

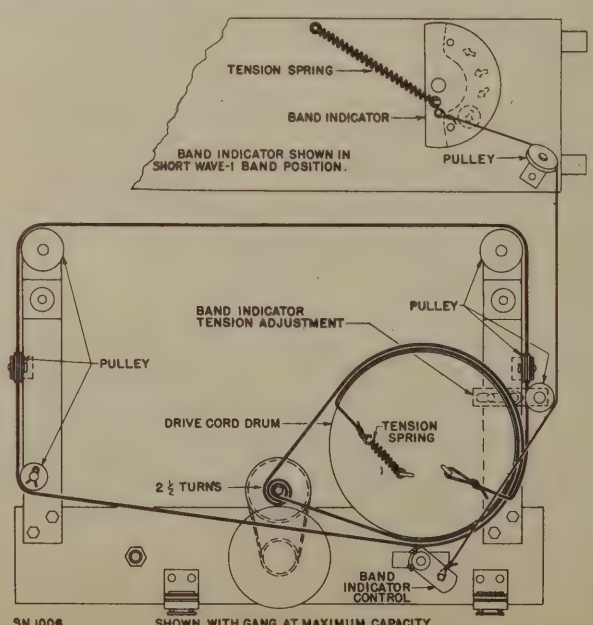
3. Dress the phono lead from phono jack to switch along the side of the chassis.

4. Dress the filament lead from No. 8 of the 12SQ7 to 12SK7 R.F. behind the 12SQ7 socket and away from diode and plate.

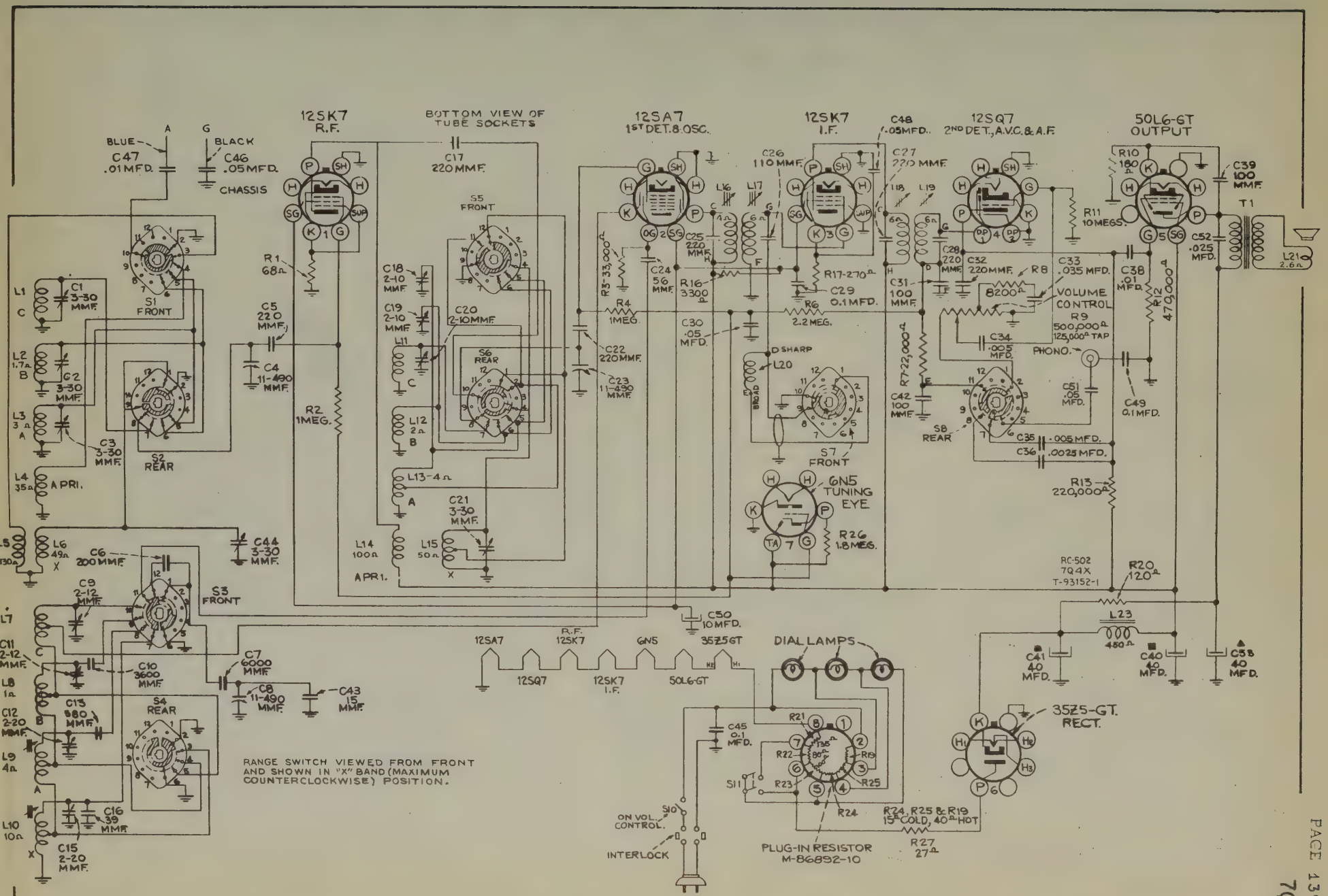
5. Dress C-34 and R-11 along chassis above volume control.

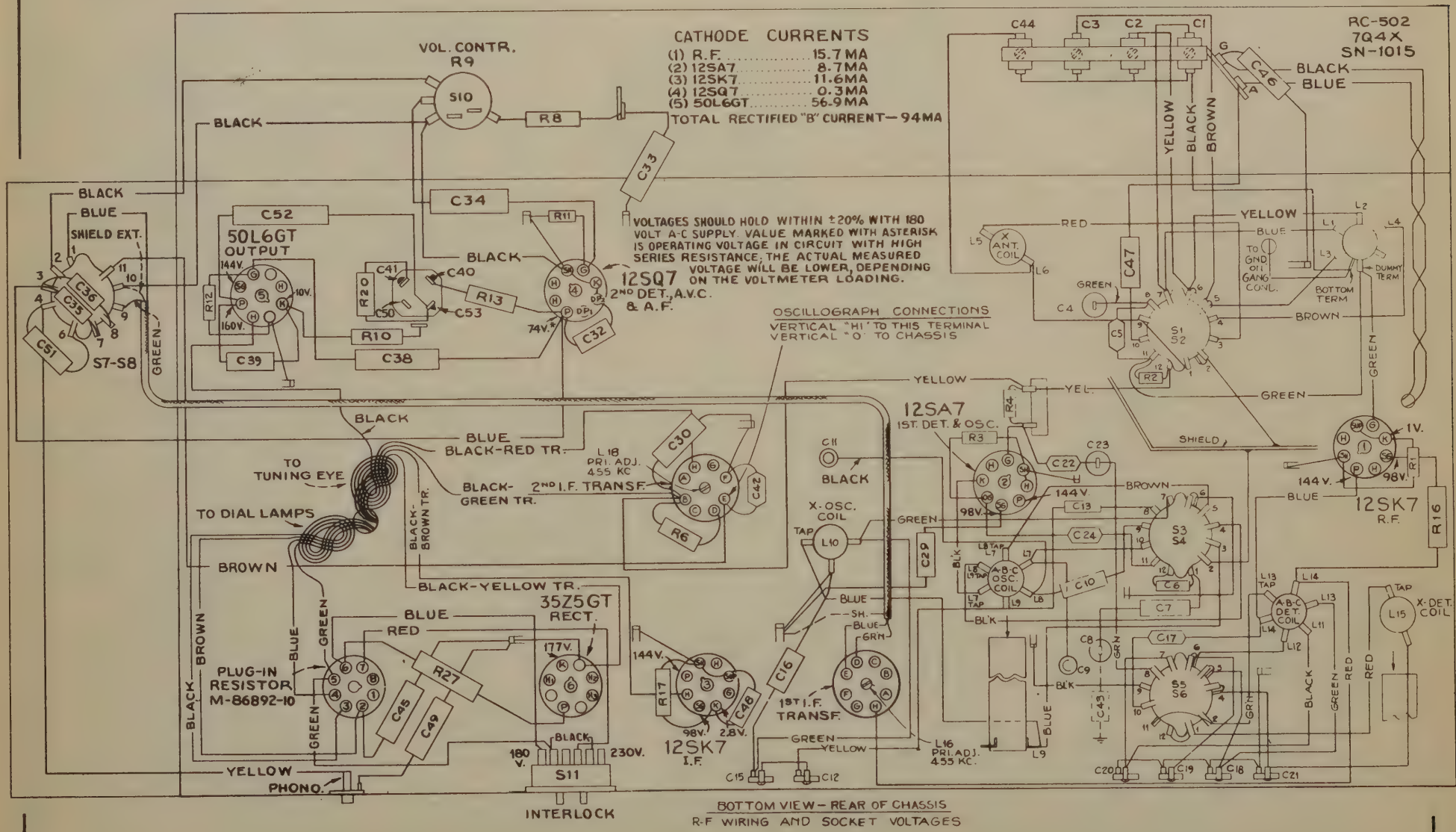



*Location of Controls*




*Drive Cord and Indicator Arrangement*


12SK7 R.F.
BOTTOM VIEW OF TUBE SOCKETS
12SA7 1ST DET. & OSC.
12SK7 I.F.
12SQ7 2ND DET., A.V.C. & A.F.
50L6-GT OUTPUT
BLUE
BLACK
CHASSIS
C47 .01 MFD.
C46 .05 MFD.
C17 220 MMF.
C48 .05 MFD.
C26 110 MMF.
C27 220 MMF.
C39 100 MMF.
T1
R10 180Ω
R11 10 MEGS.
C52 .025 MFD.
L21 2.6Ω
S1 FRONT
S5 FRONT
S6 REAR
S2 REAR
S3 FRONT
S4 REAR
S7 FRONT
S8 REAR
R1 68Ω
C5 220 MMF.
C4 11-490 MMF.
R2 1MEG.
C18 2-10 MMF.
C19 2-10 MMF.
C20 2-10 MMF.
C22 220 MMF.
C23 11-490 MMF.
C21 3-30 MMF.
L13-4Ω
L14 100Ω
L15 50Ω
A PRI.
R3 33,000Ω
R4 1MEG.
C24 56 MMF.
R16 3300Ω
C25 220 MMF.
C30 .05 MFD.
R6 2.2 MEG.
R17-270Ω
C29 0.1 MFD.
C31 100 MMF.
C28 220 MMF.
C32 220 MMF.
R8
C33 .035 MFD.
VOLUME CONTROL
R9 500,000Ω 125,000Ω TAP
C34 .005 MFD.
PHONO.
C38 .01 MFD.
R12 470,000Ω
C51 .05 MFD.
C49 0.1 MFD.
R7 22,000Ω
C42 100 MMF.
C35 .005 MFD.
C36 .0025 MFD.
R13 220,000Ω
D SHARP L20
6N5 TUNING EYE
R26 1.8 MEGS.
RC-502 7Q4X T-93152-1
R20 120Ω
L23 450Ω
C41 40 MFD.
C40 40 MFD.
C53 40 MFD.
35Z5-GT. RECT.
C50 10 MFD.
12SA7 R.F. 12SK7 6N5 35Z5GT
12SQ7 12SK7 I.F. 50L6-GT
DIAL LAMPS
C45 0.1 MFD.
R21 R22 R23 R24 R25 R19
S11
S10 ON VOL. CONTROL
INTERLOCK
PLUG-IN RESISTOR M-86892-10
R24, R25 & R19 15Ω COLD, 40Ω HOT
R27 27Ω
L1 C
L2 1.7Ω B
L3 3Ω A
L4 35Ω
L5 130Ω
L6 49Ω X
L7
L8 1Ω
L9 4Ω A
L10 10Ω X
C1 3-30 MMF.
C2 3-30 MMF.
C3 3-30 MMF.
C6 200 MMF.
C9 2-12 MMF.
C11 2-12 MMF.
C10 3600 MMF.
C13 680 MMF.
C12 2-20 MMF.
C16 39 MMF.
C15 2-20 MMF.
C44 3-30 MMF.
C7 6000 MMF.
C8 11-490 MMF.
C43 15 MMF.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "X" BAND (MAXIMUM COUNTERCLOCKWISE) POSITION.




BOTTOM VIEW — REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 34401 | Arm—Band indicator arm and hub—less cable fastens on range switch shaft |
| 35183 | Ballast—Ballast tube resistor |
| 34400 | Belt—Drive belt |
| 33821 | Capacitor—Mica trimmer comprising 3 sections of 2-10 mmfd. each, and 1 section of 3-30 mmfd. |
| 12714 | Capacitor—Air trimmer 2-12 mmfd. |
| 33818 | Capacitor—Mica trimmer comprising 2 sections of 2-20 mmfd. |
| 33822 | Capacitor—Mica trimmer comprising 4 sections of 3-30 mmfd. each |
| 12896 | Capacitor—15 mmfd. (C43) |
| 13545 | Capacitor—39 mmfd. (C16) |
| 12723 | Capacitor—56 mmfd. (C24) |
| 12720 | Capacitor—100 mmfd. (C31, C39, C42) |
| 32239 | Capacitor—110 mmfd. |
| 30232 | Capacitor—200 mmfd. (C6) |
| 33760 | Capacitor—220 mmfd. |
| 12694 | Capacitor—220 mmfd. (C5, C17, C22, C32) |
| 33235 | Capacitor—580 mmfd. (C13) |
| 12811 | Capacitor—3,600 mmfd. (C10) |
| 31405 | Capacitor—6,000 mmfd. (C7) |
| 34459 | Capacitor—.0025 mfd. (C36) |
| 33584 | Capacitor—.005 mfd. (C34, C35) |
| 4937 | Capacitor—.01 mfd. (C38, C47) |
| 4870 | Capacitor—.025 mfd. (C52) |
| 5196 | Capacitor—.035 mfd. (C33) |
| 32787 | Capacitor—.05 mfd. (C30, C46, C48, C51) |
| 4839 | Capacitor—0.1 mfd. (C29, C45, C49) |
| 35188 | Capacitor—Electrolytic comprising 3 sections of 40 mfd. each and 1 section of 10 mfd. |
| 35186 | Choke—Filter choke |
| 33762 | Coil—Antenna coil—"A," "B," and "C" band. |
| 32823 | Coil—Antenna coil "X" band |
| 33763 | Coil—Detector coil "A," "B" and "C" band |
| 33765 | Coil—Detector coil—"X" band |
| 33764 | Coil—Oscillator coil—"A," "B," and "C" band |
| 32931 | Coil—Oscillator coil—"X" band |
| 33756 | Condenser—Variable tuning condenser |
| 34403 | Control—Tone control |
| 35187 | Control—Volume control and power switch |
| 32635 | Cord—Cord for band indicator arm |
| 32634 | Cord—Station selector indicator drive cord |
| 32713 | Core—Adjustable core and stud for "A" "B" and "C" band oscillator coil |
| 34392 | Drum—Tuning condenser drive drum |
| 31480 | Lamp—Dial lamp |
| 5119 | Plug—3 contact female plug for speaker cable. |
| 31373 | Pulley—Drive cord pulley |
| 34402 | Pulley—Drive cord pulley and bracket for R.H. support |
| 34394 | Pulley—L.H. support and drive cord pulleys (2) assembled less loose pulley |
| 34395 | Pulley—R.H. support and drive cord pulleys (2) less bracket and pulley |
| 35183 | Resistor—Ballast tube resistor |
| 35191 | Resistor—27 ohms, 2 watt (R27) |
| 14281 | Resistor—68 ohms, ½ watt (R1) |
| 30936 | Resistor—120 ohms, 1 watt (R20) |
| 2736 | Resistor—180 ohms, 1 watt (R10) |
| 13454 | Resistor—270 ohms, ½ watt (R17) |
| 30150 | Resistor—3,300 ohms, 1 watt (R16) |
| 14075 | Resistor—8,200 ohms, ½ watt (R8) |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt (R3) |
| 12264 | Resistor—220,000 ohms, ½ watt (R13) |
| 12285 | Resistor—470,000 ohms, ½ watt (R12) |
| 13730 | Resistor—1 megohm, ½ watt (R2, R4) |
| 35190 | Resistor—1.8 megohm, 1/10 watt |
| 12679 | Resistor—2.2 megohm, ½ watt (R6) |
| 13601 | Resistor—10 megohm, ½ watt (R11) |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 34392 |
| 34396 | Shaft—Intermediate tuning condenser drive shaft and drive cord pulley, less drive pulley and set screw |
| 34397 | Shaft—Tuning knob shaft and flywheel—less drive belt pulley and set screws |
| 35189 | Socket—Dial lamp socket |
| 34864 | Socket—"Magic Eye" socket |
| 33742 | Socket—Phonograph input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Indicator drive cord spring |
| 34390 | Switch—Range switch |
| 32827 | Switch—Voltage change switch |
| 33759 | Transformer—1st i.f. transformer |
| 33761 | Transformer—2nd i.f. transformer |
| 35183 | Tube—Ballast tube resistor |
| 33726 | Washer—"C" washer for shafts |
| | **SPEAKER ASSEMBLIES (RL-90-1)** |
| 13866 | Cap—Dust cap |
| 35193 | Cone—Speaker cone complete with voice coil |
| 5118 | Plug—3 prong male plug for speaker |
| 35192 | Speaker—8-inch permanent magnet speaker complete with cone and voice coil—less output transformer and plug |
| 14628 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30716 | Clip—"Magic Eye" clip |
| X-821 | Cloth—Grille cloth |
| 32836 | Cord—Power cord |
| 35195 | Cover—Back cover less power cord |
| 35194 | Dial—Glass dial scale |
| 34485 | Frame—Dial frame complete—less dial pointer shaft, pointer and carriage, band indicator, spring and Magic Eye clip |
| 34488 | Indicator—Band indicator |
| 34487 | Indicator—Station selector indicator and carriage |
| 34489 | Knob—Range switch, volume control or tuning knob |
| 34490 | Knob—Tone control knob |
| 35029 | Mounting—Speaker hardware mounting parts |
| 33438 | Screw—"Magic Eye" clip screw |
| 34492 | Shaft—Extension shaft |
| 34491 | Shaft—Indicator pointer guide shaft |
| 30756 | Spring—Band indicator spring |
| 14270 | Spring—Retaining spring for knobs Stock No. 34489, 34490 |
| 33726 | Washer—Band indicator washer |

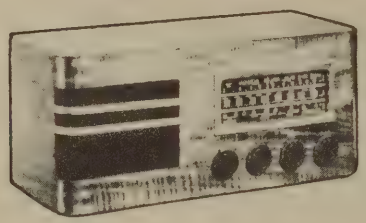
# MODELS 7QB and 7QBK

Chassis No. RC-496

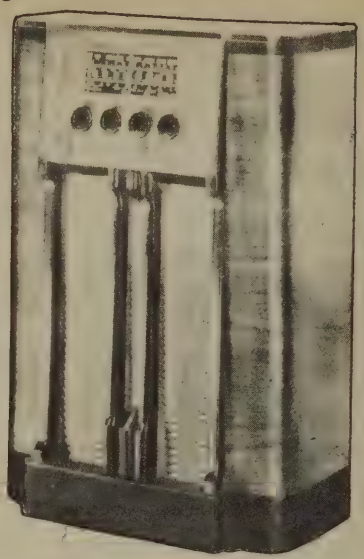
## Seven-Tube, Three-Band, Superheterodyne Receivers

and

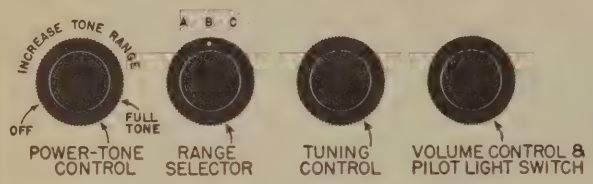
## Power Units CV-110 and MI-8122



*At Left—*
*Model 7QB*



*At Right—*
*Model 7QBK*




The pilot lights are illuminated by pressing in the volume-control knob. (The pilot lights are not controlled by this action when the receiver is operated with the CV-110 a-c power supply unit.)

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band).. 540-1,720 kc (555-174 m)
Medium Wave ("B" Band) ..... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band) ..... 7.0-22 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6S7-G ..... R-F Amplifier
(2) RCA-6SA7 ..... 1st-Detector-Oscillator
(3) RCA-6S7-G ..... I-F Amplifier
(4) RCA-6T7-G ..... 2nd-Det., A.V.C., and Audio
(5) RCA-6W7-G ..... Driver
(6) RCA-6L5-G ..... Output
(7) RCA-6L5-G ..... Output

Note: An RCA-5Y3-G rectifier is used in the CV-110 A-C power supply unit.

PILOT LAMPS (2).....Mazda No. 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING

Maximum ..... 2.6 watts
Undistorted ..... 2.0 watts

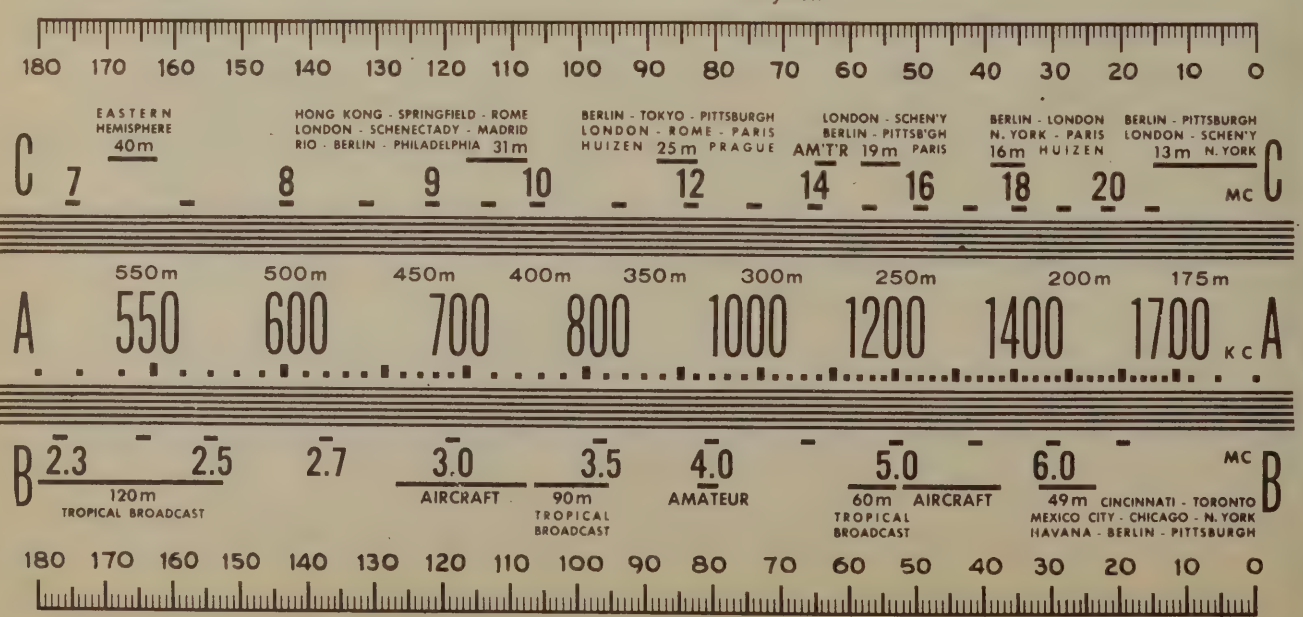
LOUDSPEAKERS (Permanent-Magnet Dynamics)

7QB (RL-90-2) ..... 8-inch
7QBK (RL-71-5) ..... 12-inch
Voice-coil impedance at 400 cycles ..... 2.4 ohms

POWER SUPPLY RATING

D-C Rating (with vibrator-type power supply unit MI-8122)—6.3 volts, 3.2 amps.

A-C Rating (with CV-110 A-C power supply unit)—105-117, 117-130, 140-160, 200-225, 225-250 volts, 25-60 cycles.


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
EASTERN HEMISPHERE 40m
HONG KONG - SPRINGFIELD - ROME
LONDON - SCHENECTADY - MADRID
RIO - BERLIN - PHILADELPHIA 31m
BERLIN - TOKYO - PITTSBURGH
LONDON - ROME - PARIS
HUIZEN 25m PRAGUE
LONDON - SCHEN'Y
BERLIN - PITTSB'GH
AM'T'R 19m PARIS
BERLIN - LONDON
N. YORK - PARIS
16m HUIZEN
BERLIN - PITTSBURGH
LONDON - SCHEN'Y
13m N. YORK
C 7 8 9 10 12 14 16 18 20 MC C
550m 500m 450m 400m 350m 300m 250m 200m 175m
A 550 600 700 800 1000 1200 1400 1700 KC A
B 2.3 2.5 2.7 3.0 3.5 4.0 5.0 6.0 MC B
120m TROPICAL BROADCAST
AIRCRAFT
90m TROPICAL BROADCAST
AMATEUR
60m TROPICAL BROADCAST
AIRCRAFT
49m CINCINNATI - TORONTO
MEXICO CITY - CHICAGO - N. YORK
HAVANA - BERLIN - PITTSBURGH
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*

# Alignment Procedure



**Precautionary Lead Dress.—**

1. Dress the blue lead from the antenna lug to the No. 1 terminal on the range switch (S-1) close to the chassis and away from the gang for its entire length across the top of the chassis base.

2. Dress the yellow lead from the detector coil to No. 8 terminal on the range switch (S-2), directly away from the detector coil towards the rear apron.

3. Keep the blue lead from the detector coil to No. 9 terminal on the range switch (S-2), isolated from the other leads and parts.

4. Loop the bus wire from oscillator coil to No. 5 terminal on the range switch (S-3), directly away from these terminals and other parts as far as possible, bending the loop towards the center of the chassis.

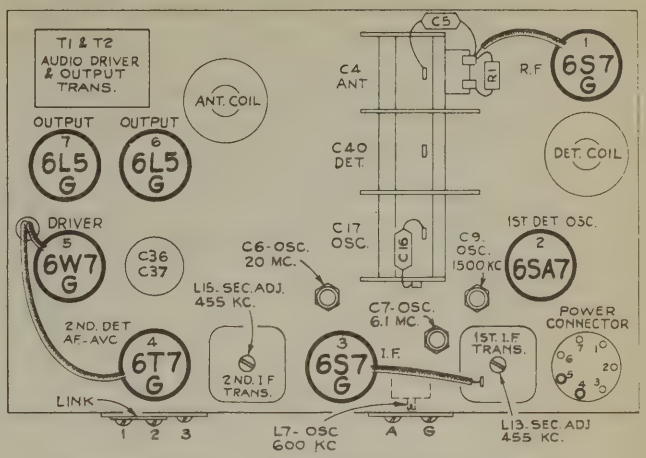
5. Dress the 3,300 mmfd. capacitor (C8) from the oscillator coil to No. 4 terminal on the range switch (S-3), directly toward the center of the chassis, being sure to clear the bus wire loop mentioned above (4).

6. Pull in the slack on the long yellow wire which runs from the terminal board in the rear corner to the tone control, at the tone control end, making the portion of the lead lying outside the front apron taut, and close to the apron.

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.




**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark on the dial scales and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

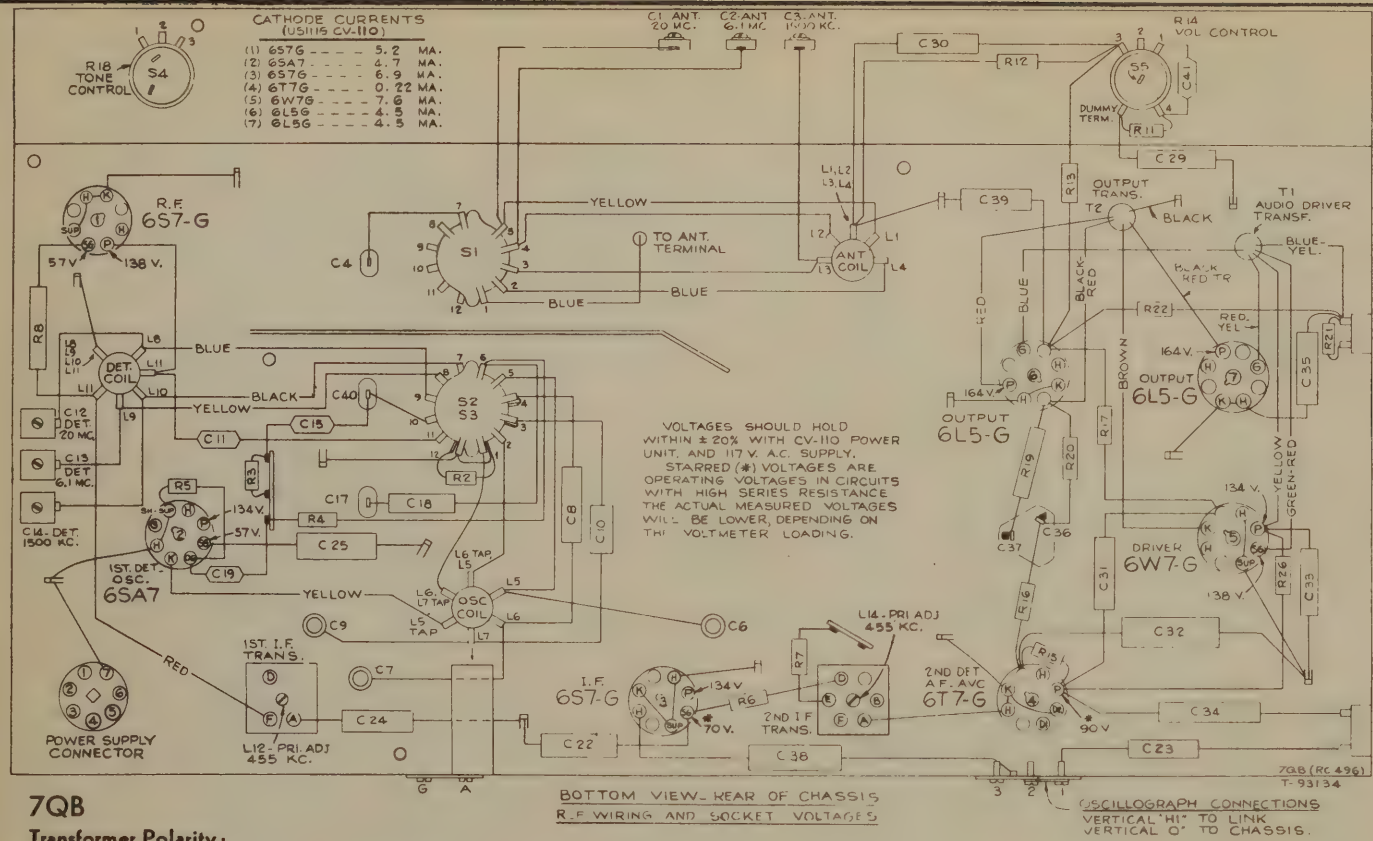
| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6S7-G I-F grid cap in series with .01 mfd. | 455 kc | "A" band Quiet point between 550-750 kc | L14 and L15 (2nd I-F trans.) |
| 2 | 6SA7 1st det. grid cap in series with .01 mfd. | | | L12 and L13 (1st I-F trans.) |
| 3 | Antenna terminal in series with 300 ohms | 20 mc | 20 mc (22°) "C" band | C6 (osc.)* C12 (det.) (Rock C1 (ant.) Gang) |
| 4 | | 6.1 mc | 6.1 mc (27.9°) "B" band | C7 (osc.)** C13 (det.) C2 (ant.) |
| 5 | Antenna terminal in series with 200 mmfd. | 600 kc | 600 kc (143.5°) "A" band | L7 (osc.) Rock Gang |
| 6 | | 1,500 kc | 1,500 kc (27.8°) "A" band | C9 (osc.) C14 (det.) C3 (ant.) |
| 7 | Repeat steps 5 and 6 | | | |

* Use **minimum** capacity peak (plunger out) if two can be obtained. Check to determine that C6 has been adjusted to the correct peak by turning radio to approximately 19.09 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C7 has been adjusted to the correct peak by turning radio to approximately 5.19 mc where a weaker signal should be heard.

**Note:** Oscillator tracks **above** signal on all bands.

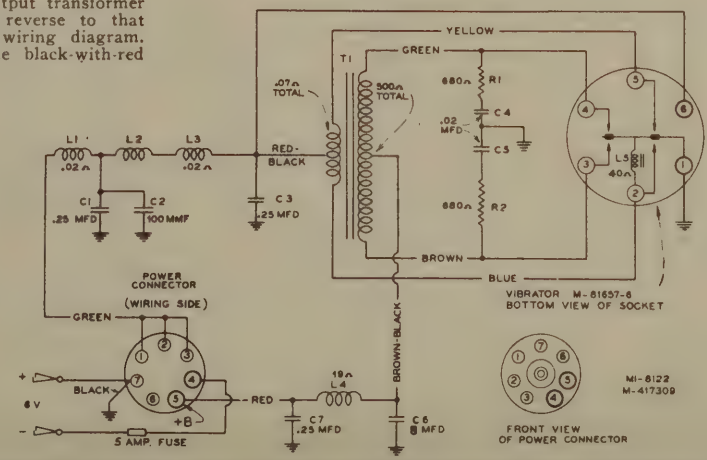
# 7QB, 7QBK, CV-110, MI-8122




## 7QB

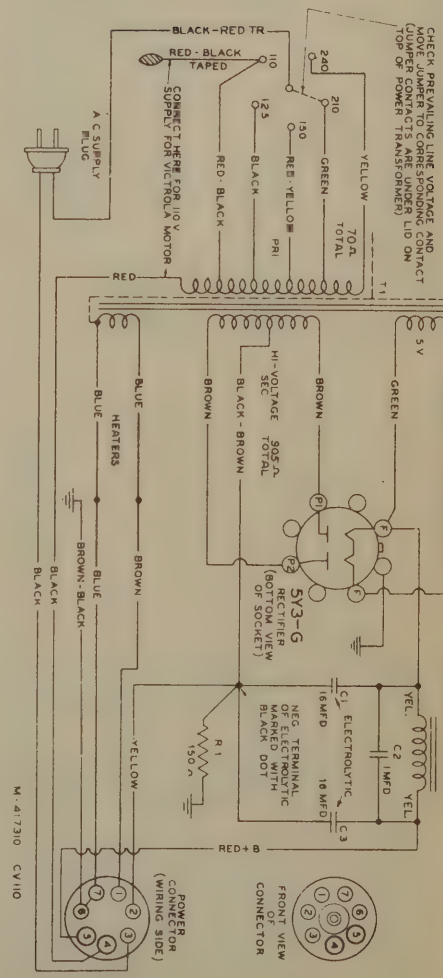
### Transformer Polarity:

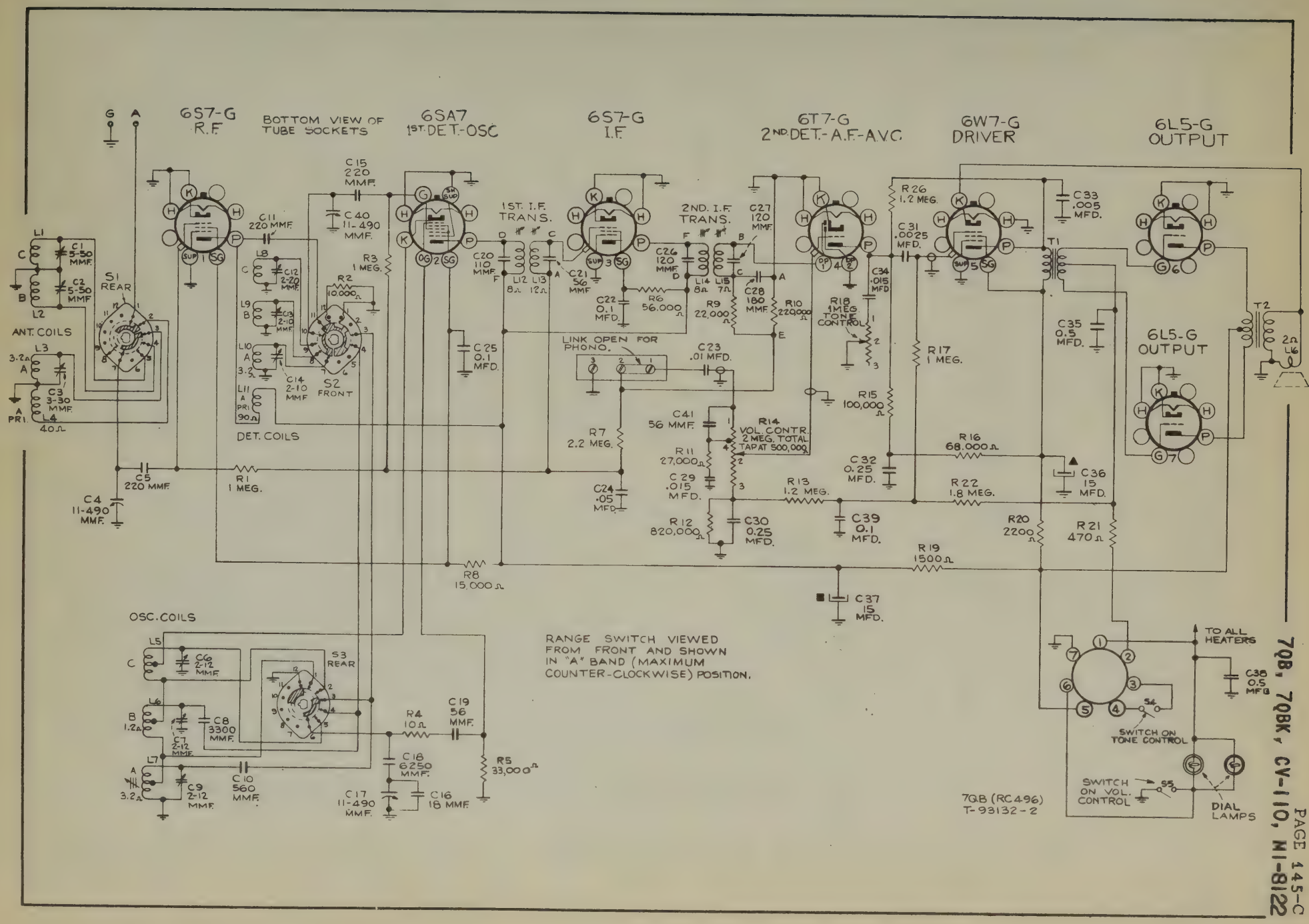
On some production receivers, the leads from the primary winding of the output transformer are color-coded in a manner reverse to that shown in the Service Notes wiring diagram. That is, the red lead and the black-with-red tracer lead are interchanged.



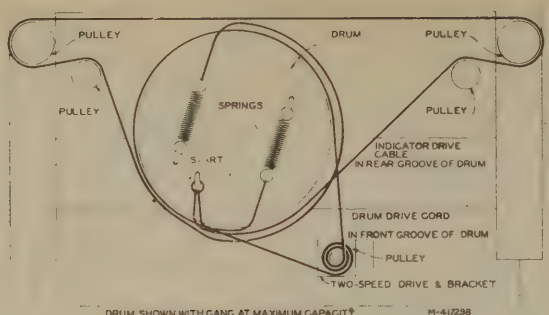

*MI-8122 Vibrator Type Power Supply Unit*

*CV-110 A-C Power Supply Unit*






PAGE 145-C
7QB, 7QBK, CV-110, MI-8122




*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-496)** |
| 12806 | Board—"Antenna-Ground" board |
| 12717 | Board—Phonograph terminal board |
| 12714 | Capacitor—Air-trimmer medium—2-12 mmfd. (C6, C7, C9) |
| 34654 | Capacitor—Mica trimmer comprising 2 sections of 2.5-10 mmfd., and 1 section of 2.5-20 mmfd. (C12, C13, C14) |
| 34653 | Capacitor—Mica trimmer comprising 2 sections of 5-50 mmfd.. and 1 section of 3-30 mmfd. (C1, C2, C3) |
| 12722 | Capacitor—18 mmfd. (C16) |
| 12723 | Capacitor—56 mmfd. (C19, C41) |
| 30949 | Capacitor—56 mmfd. (C21) |
| 32238 | Capacitor—110 mmfd. (C20) |
| 31813 | Capacitor—120 mmfd. (C26, C27) |
| 14712 | Capacitor—180 mmfd. (C28) |
| 12694 | Capacitor—220 mmfd. (C5, C11, C15) |
| 31433 | Capacitor—560 mmfd. (C10) |
| 31403 | Capacitor—3,300 mmfd. (C8) |
| 35252 | Capacitor—6,250 mmfd. (C16) |
| 34459 | Capacitor—.0025 mfd. (C31) |
| 33584 | Capacitor—.005 mfd. (C33) |
| 4937 | Capacitor—.01 mfd. (C23) |
| 30856 | Capacitor—.015 mfd. (C29, C34) |
| 32787 | Capacitor—.05 mfd. (C24) |
| 4839 | Capacitor—0.1 mfd. (C22, C25, C39) |
| 12484 | Capacitor—0.25 mfd. (C30, C32) |
| 12741 | Capacitor—0.5 mfd. (C35, C38) |
| 32152 | Capacitor—Electrolytic, 2 sections 15 mfd. each (C36, C37) |
| 31780 | Coil—Antenna coil (L1, L2, L3, L4)—less shield |
| 32824 | Coil—Oscillator coil (L5, L6, L7) |
| 31781 | Coil—R.F coil (L8, L9, L10, L11)—less shield |
| 31774 | Condenser—3-gang variable tuning condenser |
| 31777 | Control—Tone control |
| 31776 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 31787 | Drive—Two (2) speed drive with mounting bracket |
| 31808 | Drum—Pointer cord drive drum |
| 31480 | Lamp—Dial lamp |
| 31373 | Pulley—Drive cord pulley small |
| 34854 | Pulley—L.H. pulley and bracket assembly—less small pulley and retainer |
| 34855 | Pulley—R.H. pulley and bracket assembly—less small pulley and retainer |
| 31788 | Pulley—Two speed drive pulley |
| 13988 | Resistor—10 ohms, ½ watt (R4) |
| 30546 | Resistor—470 ohms, ½ watt (R21) |
| 3153 | Resistor—1,500 ohms, 1 watt (R19) |
| 3526 | Resistor—2,200 ohms, ½ watt (R20) |
| 14559 | Resistor—10,000 ohms, ½ watt (R2) |
| 5114 | Resistor—15,000 ohms, 1 watt (R8) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R9) |
| 12738 | Resistor—27,000 ohms, ½ watt (R11) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R5) |
| 30650 | Resistor—56,000 ohms, ½ watt (R6) |
| 13715 | Resistor—68,000 ohms, ½ watt (R18) |
| 11281 | Resistor—100,000 ohms, 1/10 watt (R15) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R10) |
| 30963 | Resistor—820,000 ohms, ½ watt (R12) |
| 12013 | Resistor—1 meg., 1/10 watt (R3, R17) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 31056 | Resistor—1.2 meg., 1/10 watt (R13, R26) |
| 35190 | Resistor—1.8 meg., 1/10 watt (R22) |
| 5131 | Resistor—2.2 meg.. 1/10 watt (R7) |
| 30340 | Retainer—Drive cord pulley—small retainer |

| STOCK No. | DESCRIPTION |
|---|---|
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31808 |
| 14374 | Shield—Shield can for coils Stock Nos. 31780, 31781 |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 14404 | Socket—7-prong male connector |
| 13638 | Spring—Drive cord spring |
| 31775 | Switch—Range switch |
| 14261 | Transformer—First i-f transformer |
| 14283 | Transformer—Second i-f transformer |
| 32368 | Transformer—Transformer pack including an audio and an output transformer (Replacement transformer has one additional green lead not required for 7QB or 7QBK—tape to prevent shorts) |
| | **POWER SUPPLY UNIT ASSEMBLIES (MI-8122)** |
| 12720 | Capacitor—100 mmfd. |
| 31798 | Capacitor—.02 mfd. (C3, C4) |
| 12484 | Capacitor—0.25 mfd. (C3) |
| 33879 | Capacitor—10 mfd. |
| 14289 | Clip—Battery clips—one marked "+" and one unmarked |
| 31794 | Coil—Choke coil |
| 12819 | Coil—Vibrator coil and terminal board assembly |
| 5140 | Fuse—5 Amp. |
| 14409 | Plug—7-contact female plug for power cable |
| 12262 | Resistor—680 ohms, ½ watt (R1, R2) |
| 31793 | Transformer—Vibrator power transformer |
| 31795 | Vibrator—Plug-in vibrator |
| | **CV-110 A-C POWER SUPPLY UNIT** |
| 32015 | Capacitor—1 mfd. (C2) |
| 32013 | Capacitor—Comprising 2 sections 16 mfd. each (C1, C3) |
| 14409 | Plug—7-contact plug for power output cable |
| 32014 | Reactor—Filter reactor (L1) |
| 30880 | Resistor—150 ohms, ½ watt (R1) |
| 31251 | Socket—Rectifier tube socket |
| 31998 | Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 25-60 cycles (T1) |
| | **SPEAKER ASSEMBLIES Model 7QB (RL-90-2)** |
| 31825 | Cap—Dust cap |
| 35193 | Cone—Cone complete with voice coil |
| 35192 | Speaker—8-inch permanent magnet speaker complete with cone and voice coil—less plug |
| | **SPEAKER ASSEMBLIES Model 7QBK (RL-71-5)** |
| 31275 | Cone—Speaker cone and voice coil |
| 5118 | Plug—3-contact male plug for speaker |
| 31798 | Speaker Complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 34859 | Dial—Glass dial scale |
| 33833 | Escutcheon—Station selector dial scale escutcheon |
| 34858 | Frame—Dial frame complete—less pointer guide rods, pointer and carriage and dial scale |
| 34860 | Indicator—Station selector indicator |
| 34862 | Knob—Range switch knob |
| 34861 | Knob—Tuning, tone control or volume control and power switch knob |
| 34491 | Shaft—Pointer carriage guide rod |
| 14270 | Spring—Retaining spring for knobs Stock Nos. 34861 and 34862 |

# MODELS QU7 and QU8

Chassis No. RC-551

## Twenty Tube, and Twenty-Four Tube, Eight-Band, AC Superheterodyne Receiver, Automatic Phonograph, Recorder, and Public Address System

## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave ("X" Band) | 140-410 kc (2145-735 m) |
| Medium Wave ("A" Band) | 540-1,720 kc (555-174 m) |
| Short Wave ("B" Band) | 3.1-9.5 mc (97.5-31.5 m) |
| 31 Meter Spread Band | 9.45-12 mc (31.8-25.4 m) |
| 25 Meter Spread Band | 11.65-15.2 mc (25.6-19.9 m) |
| 19 Meter Spread Band | 15.1-17.75 mc (19.9-16.9 m) |
| 16 Meter Spread Band | 17.73-18.5 mc (16.9-16.2 m) |
| 13 Meter Spread Band | 21.45-22.6 mc (13.95-13.3) |

INTERMEDIATE FREQUENCY ..... 455 kc

PILOT LAMPS ..... 16 Type Mazda 44, 6-8 volts

USED ONLY IN QU8

RCA TUBE COMPLEMENT

| | | |
|---|---|---|
| (1) | RCA-6SK7 | R-F Amplifier |
| (2) | RCA-6SA7 | Oscillator |
| (3) | RCA-6SA7 | 1st Detector |
| (4) | RCA-6SK7 | 1st I-F |
| (5) | RCA-6B8G | A.V.C. I-F |
| (6) | RCA-6U5 | Tuning Indicator |
| (7) | RCA-6B8G | 2nd I-F, 2nd Detector |
| (8) | RCA-12SK7 | 1st Audio |
| (9) | RCA-6SC7 | Mixer |
| (10) | RCA-6J5 | Audio |
| (11) | RCA-6V6-GT | Driver |
| (12) | RCA-12SK7 | Microphone Pre-Amplifier |
| (13) | RCA-6H6 | Mic. Volume Limiter |
| (14) | RCA-6U5 | Recording Indicator |
| (15) | RCA-6F6G | Power Output |
| (16) | RCA-6F6G | Power Output |
| (17) | RCA-6F6G | Power Output |
| (18) | RCA-6F6G | Power Output |
| (19) | RCA-VR150-30 | Voltage Regulator |
| (20) | RCA-VR105-30 | Voltage Regulator |
| (21) | RCA-VR105-30 | Voltage Regulator |
| (22) | RCA-5Y3G | Bias Rectifier |
| (23) | RCA-5U4G | Rectifier |
| (24) | RCA-5U4G | Rectifier |

### QU7

CABINET DIMENSIONS

| | |
|---|---|
| Height | 39 inches |
| Width | 37 inches |
| Depth | 19 inches |
| Weight Net ..... 245 lbs. Shipping | 363 lbs. |
| Tuning Drive Ratio | 25 to 1 |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 30 watts |
| Maximum | 45 watts |

LOUDSPEAKERS (2) (RL-76-B2) (RL-76-B3)

| | |
|---|---|
| Type | 12 in. Electrodynamic |
| Voice Coil Impedance | 11.5 ohms at 400 cycles |

PHONOGRAPH **RP Type 157**

| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight "10" or Seven "12" inch Records |
| Turntable Speed | 78 r.p.m. |
| Type Pickup | Magnetic |
| Pickup Impedance | 96 ohms at 1,000 cycles |
| Watts Phono Motor 60 cycle | 27 |
| 50 cycle | 33 |
| 25 cycle | 30 |

POWER SUPPLY RATING

100-130, 140-160, 195-250 volts, 50-60 cycles ..... 400 watts

RECORDER

| | |
|---|---|
| Cutter Head | Magnetic |
| Impedance of Cutter at 1,000 cycles | 6 ohms |
| Turntable Speed | 78 r.p.m. |
| Grooves Cut Per Inch | 96 |
| Inches Cut Per Minute | .81 |
| Recording Blank Discs | Acetate coated metal base |
| Recording Disc Diameter | Up to 12 inches |
| Drive | Lead screw driven from turntable |

PUBLIC ADDRESS USE

| | |
|---|---|
| Microphone Type | RCA Aerodynamic MI-6226D |
| Microphone Input Impedance | 250 ohms |
| Output to External Speakers | 500 ohm line |
| No. of External Speakers | Up to 15 |
| Power Output | 45 watts max. |

### QU8

CABINET DIMENSIONS

| | |
|---|---|
| Height | 42 inches |
| Width | 42¾ inches |
| Depth | 22½ inches |
| Weight Net ..... 308 lbs. Shipping | 470 lbs. |
| Tuning Drive Ratio | 25 to 1 |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 50 watts |
| Maximum | 60 watts |

LOUDSPEAKERS (2) (RL-76-B2) (RL-76-B3)

| | |
|---|---|
| Type | 12 in. Electrodynamic |
| Voice Coil Impedance | 11.5 ohms at 400 cycles |

PHONOGRAPH **Type 16E**

| | |
|---|---|
| Type | Fully Automatic |
| Record Capacity | Twenty 10 or 12 inch or twenty mixed Records |
| Turntable Speed | 78 r.p.m. |
| Drive | Motor through reduction gear box direct to turntable |
| Type Pick-Up | Magnetic |
| Pickup Impedance | 96 ohms at 1,000 cycles |
| Watts Phono Motor 60 cycle | 90 |
| 50 cycle | 110 |

POWER SUPPLY RATING

100-130, 140-160, 195-250 volts, 40-60 cycles ..... 410 watts

RECORDER

| | |
|---|---|
| Cutter Head | Magnetic |
| Impedance of Cutter at 1,000 cycles | 6 ohms |
| Turntable Speed | 78 r.p.m. |
| Grooves Cut Per Inch | 96 |
| Inches Cut Per Minute | .81 |
| Recording Blank Discs | Acetate coated metal base |
| Recording Disc Diameter | Up to 12 inches |
| Drive | Lead screw driven from turntable |

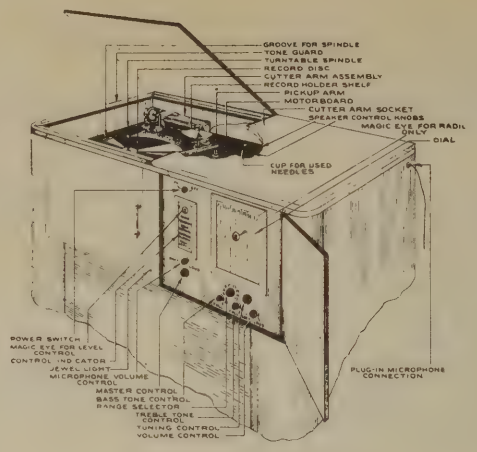
PUBLIC ADDRESS USE

| | |
|---|---|
| Microphone Type | Velocity (Ribbon) MI-4036-K |
| Microphone Input Impedance | 250 ohms |
| Output to External Speakers | 500 ohm line |
| No. of External Speakers | Up to 30 |
| Power Output | 60 watts max. |

QU-7, QU-8

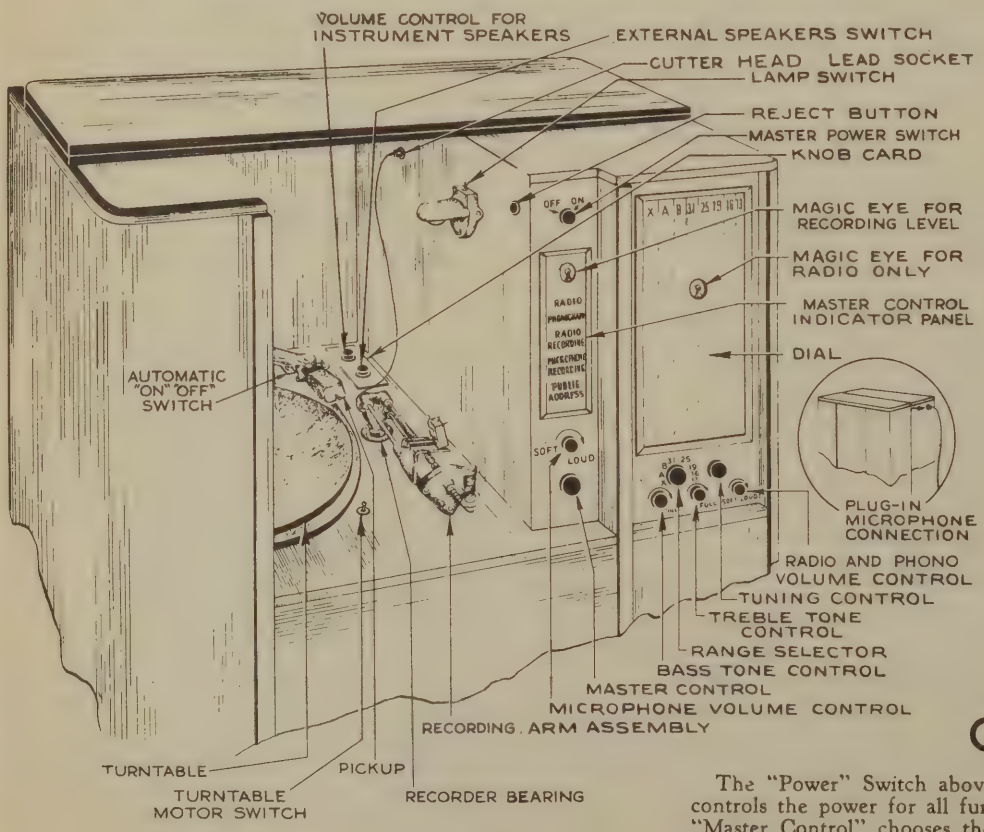
# General Description

Model QU7 is a superior-quality Radio-Phonograph Combination which includes: a twenty tube superheterodyne radio receiver, an automatic phonograph mechanism, a disc recorder, and has provision for use as a Public Address System. Features of design include: Eight Tuning Bands with five "Spread Bands," Two I-F Stages, Controlled Selectivity, Separate Channel AVC, Automatic Tone Control, Automatic Bass Amplifier, Treble Tone Control, Bass Tone Control, Temperature Compensated Tuning Circuits, Twin 12-inch Speakers. The Phonograph has a specially designed Magnetic Pickup, Automatic Bass Amplifier, Acoustic Adaptor Circuit, Powerful Motor, and Treble and Bass controls. The Recorder will record on up to 12-inch discs the following: Radio Programs, Voice or music of an individual or group, Radio programs plus another voice or special music through the Microphone, plus other combinations of Recorder and Microphone. When used as a P. A. System, this instrument will feed up to fifteen external speakers, and has a separate monitor speaker control to control volume of the speakers in the cabinet. The Microphone supplied for the Recorder and P. A. System is the high-quality RCA Aerodynamic Microphone.




*Operating Controls*

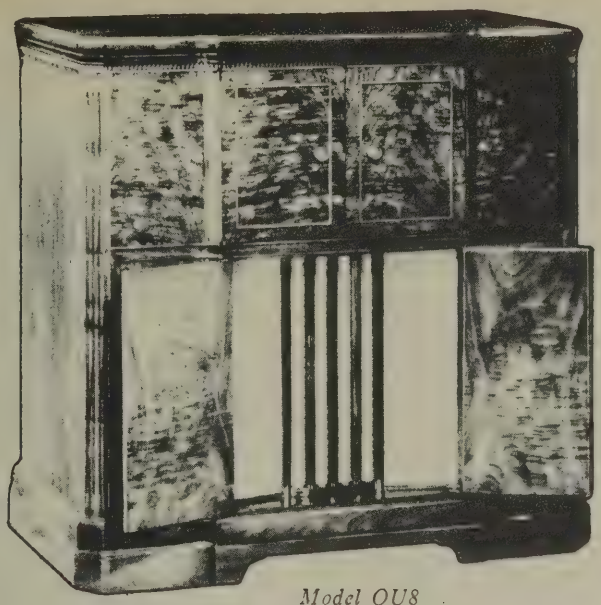
Model QU8 is a superior-quality Radio-Phonograph Combination which includes: a twenty-four tube superheterodyne radio receiver, a fully automatic phonograph mechanism, a disc recorder, and has provision for use as a Public Address System. Features of design include: Eight Tuning Bands with five "Spread Bands," Two I-F Stages, Controlled Selectivity, Separate Channel AVC, Automatic Tone Control, Automatic Bass Amplifier, Treble Tone Control, Bass Tone Control, Temperature Compensated Tuning Circuits, Twin 12-inch Speakers. The Phonograph will: repeat one record, play in sequence from 3 to 20 records (10-inch, 12-inch or mixed) on both sides automatically; and has: specially designed Magnetic Pickup, Automatic Bass Amplifier, Acoustic Adaptor Circuit, Powerful Motor, and Treble and Bass controls. The Recorder will record on up to 12-inch discs the following: Radio Programs, Voice or music of an individual or group, Radio programs plus another voice or special music through the Microphone, plus other combinations of Recorder and Microphone. When used as a P. A. System, this instrument will feed up to thirty external speakers, and has a separate monitor speaker control to control volume of the speakers in the cabinet. The Microphone supplied for the Recorder and P. A. System is the high-quality RCA Velocity (Ribbon Type) Microphone.




*Operating Controls*

# Operation

The "Power" Switch above the Master Control Indicator controls the power for all functions of this instrument. The "Master Control" chooses the type of function desired: the full counter-clockwise position of this switch being the "Radio" position, and successively clockwise the positions are: "Phonograph"; "Radio Recording"; "Microphone Recording"; "Radio Recording" *and* "Microphone Recording"; and "Public Address." These functions are indicated on the "Master Control Indicator" as the "Master Control" switch is turned.



*Model QU8*

*Model QU7*

## Radio Operation:— QU7 & QU8

Turn Power Switch "ON," set Master Control to "Radio," set "Range Selector" to band desired, and tune in station desired. Volume is controlled by Volume control on Radio Panel. Adjust Bass and Treble controls as desired. For high-fidelity reception of local stations the Treble Tone control should be turned completely clockwise until the fidelity switch functions.

## Phonograph Operation:— QU7

**Manual Operation:**—Turn Power Switch "ON." Set Master Control for "Phonograph." If mechanism is in cycle, wait until cycle is completed. Set Index Lever to "Manual" position. Set "Recording Turntable Switch" to "OFF." Place pickup on pickup support posts. Make sure there is a good needle in pickup. Lift the knobs on top of the record shelves and rotate the shelves back, away from the turntable. Push back the vertical lever at left of the rear record post. Place record on turntable. Place pickup on record, motor switch on pickup arm will start turntable motor. Adjust "Volume" and "Tone" Controls for desired reproduction. The turntable should stop when pickup reaches inner groove of record.

**Automatic Operation:**—Turn "Power Switch" "ON." Turn "Master Control" to Phonograph. If mechanism is in cycle, wait until cycle has been completed. Set pickup on pickup support posts. See that Recording Turntable switch is "OFF." Check to see if a good needle is in pickup head.

Push index lever to "manual," lift the knobs on the top of the record shelf posts and rotate the shelves back, away from the turntable. Push back the vertical lever at left of the rear record post.

Select a series of eight 10-inch records, or seven 12-inch records, and place the first one on the turntable. Swing the record shelves into position and place the remainder of the series of records on the shelves as shown in the illustration.

Push the index lever to "10" for a series of 10-inch records, or to "12" for a series of 12-inch records.

Lift the pickup and lower it gently on the record, so that the needle point enters the outside groove. The motor switch under pickup arm will start turntable.

Adjust the radio-phonograph volume control for the desired volume, and adjust the tone controls for desired reproduction.

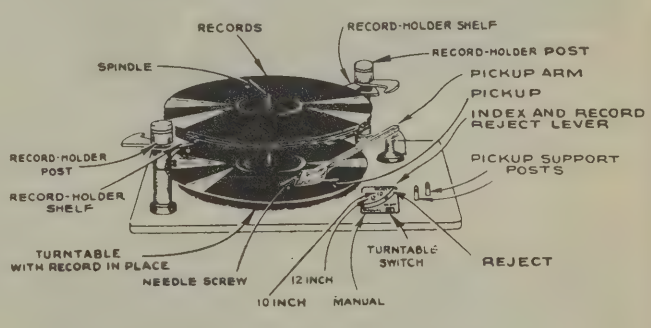
Close the lid of the cabinet to eliminate mechanical sound. The whole series of records will play without further attention, and the last record will repeat until either pickup is lifted off record and placed on record support posts, or Power Switch is turned off.

**To reject a record being played, or to start the record-changing cycle** in case the record just played does not have the standard eccentric or spiral stopping groove, simply push the index lever to the "reject" position and let go. The pick-up will raise up and swing outwards and the next record will drop down. Upon releasing the index lever, it will automatically return to the "10" position. If playing a series of 12-inch records, the lever should be returned to the "12" position after rejecting a record. Keep the lever in at "manual" when not actually playing records automatically.

**To stop the mechanism while a record is being played,** push the index lever to "manual," place the pickup on its rest, and turn off the turntable switch.

**To stop the mechanism at the completion of a record,** first allow the pickup to complete its cycle (the cycle is completed when the pickup comes down on the record). Then push the index lever to "manual," place the pickup on its rest.

**To remove a record from the turntable,** lift the knobs on top of the record-holder posts, swing the shelves back clear of the records, and push back the vertical lever at left of the rear record post.




*Record changer - operating controls*

## Phonograph Operation:— QU8

**NOTE:—Before Operating Phonograph, make sure that the phono-drive reduction gear box has been filled with the oil supplied with the instrument; and also add a few drops of good quality motor oil (SAE No. 30) to the motor bearings.**

## QU-7, QU 8

1. **Manual Operation:**—Turn Power Switch "ON," turn "Master Control" to "Phonograph." See that "Automatic" Switch at rear of turntable is "OFF." Place record on turntable; turn "Motor" switch at front of turntable to "ON"; place pickup on record; control volume with "Volume Control" on radio panel. Adjust "Bass" and "Treble" controls as desired.

2. **Automatic Operation:**—Turn "Power" Switch "ON"; turn "Master Control" to "Phonograph."

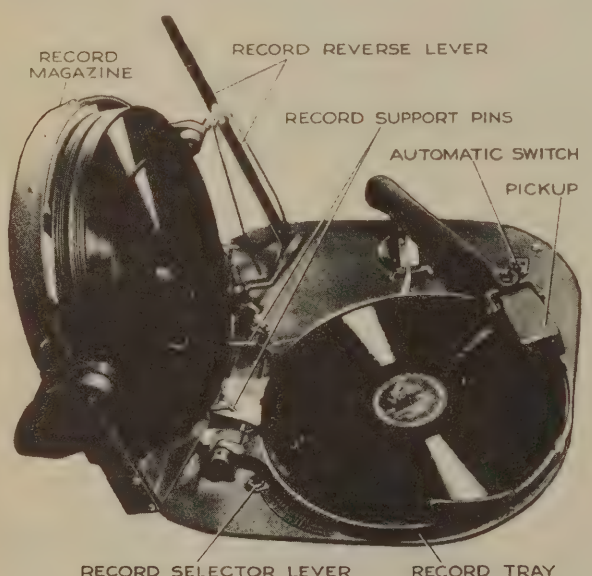
Load the records vertically on the Record Magazine in the order desired.

**IMPORTANT:**—THE FIRST RECORD, WHICH IS THE FIRST TO BE PLAYED, MUST BE SECURELY PLACED ON THE RECORD SUPPORT PINS AND PUSHED FLUSH AGAINST THE UPPER AND LOWER RECORD SUPPORT SURFACES. The side to be played first should be facing outwards. The other records (up to 20) are then placed on the record support pins in the sequence desired, with the selection to be played first facing outwards. IMPORTANT:—NOT LESS THAN 3 RECORDS SHOULD BE PLAYED AUTOMATICALLY. Set the "Record Selector Lever" to play "One side" or "Both Sides," throw the "Automatic" Switch at rear of turntable to "ON," then turn "Motor" switch to "ON."

To repeat a record set the "Record Selector Lever" to "Repeat." To reject a record, push the "Reject" button at top right side of Phono Compartment.

**NOTE:**—If Automatic Mechanism jams during a cycle, turn "OFF" "Master Power Switch" before clearing cause of jam, as the "Motor" switch does not remove power to phono. motor while mechanism is in cycle.

If Master "Power" Switch is turned "OFF" while the automatic mechanism is "in cycle," the mechanism will finish the cycle when the Master "Power" Switch is next turned "ON."




*Record Changer—Operating Controls*

## Recorder Operation:— QU7 & QU8

**Recorder Set Up:**—Turn Master Power Switch "ON." Make sure that Automatic Phono. Mechanism is not "in cycle," and turn the "Automatic" Phonograph switch to the "OFF" position. Place the "Auxiliary Recording Turntable Plate" on the turntable, with the key in the plate engaging the slot in the turntable spindle. Place the recording blank on the turntable so that the three holes in the blank line up with the holes in the recording turntable. Place the Recording arm in position, with the hinged mounting spindle in the bearing on the phonograph shelf, and the drive pins in the holes in the recording blank and turntable. The cutter head bracket should be locked in position under the catch at the drive end of the recording arm until used. Place a cutting stylus fully in the cutter head so that the flat side of the stylus is toward the needle screw.

While recording, use a fine hair brush to keep the area ahead of the stylus free from chips and threads.

Before making each recording tighten the screw on the front of the cutting head that holds the cutting stylus. Do not use pliers or wrench.

**Radio Recording:**—Tune in desired radio program. Turn Master Control to "Radio Recording." Set "Bass Tone Control" fully clockwise and "Treble Tone Control" fully clockwise. Adjust receiver "Volume Control" so that the "Recorder Magic Eye" in the "Master Control Indicator Panel" closes to about a ¼ inch opening at minimum width for normal volume. Start Turntable with "Motor Switch." When the desired program comes on, pull down cutter bracket from its catch, move it to opposite end of "Recorder Arm" and place cutting stylus gently on record blank about ¼ inch from outer rim.

The speaker and "Recorder Magic Eye" both monitor the recording, so that it is possible to hold the necessary recording level during the program. Lift the cutter from the record before it reaches the inner limit of the record, and lock cutter bracket under the cutter catch.

**Microphone Recording:—**

Set up Recorder.

Turn "Master Control" to "Microphone Recording."

Set "Microphone Volume Control" to the correct level by testing on some of the sound to be recorded. Set control so that the "Recorder Magic Eye" closes to about a ¼ inch opening at minimum width for normal Volume. The "Microphone Volume Limiter" tube will keep excessively loud sounds to a safe limit. Start turntable. Remove cutter bracket from catch and proceed with recording. Keep "Bass Tone Control" and "Treble Tone Control" maximum clockwise.

**Re-Recording:—**

Set up Recorder.

Turn "Master Control" to "Radio Recording."

Connect an "RCA Victrola Phonograph Attachment" by plugging an adapter plug into the "Television, FM" jack at the rear of the radio chassis. Turn the attachment volume control full "ON." Place the record it is desired to duplicate on the attachment turntable, and play a portion of it, meanwhile adjusting the "Radio Volume Control" to give the correct recording level in the "Recording Magic Eye." After the correct level has been set, proceed with the recording.

**Mixed Radio and Microphone Recording:—**

Set up for Recording.

Set "Master Control" so that both "Radio" Recording and "Microphone Recording" are indicated.

Tune in desired radio program.

Set program level same as in "Radio Recording."

Set Microphone Volume Control same as in "Microphone Recording."

Proceed with recording.

**Mixed Microphone and Record Recording or Re-Recording:—**

Set up for Recording.

Set "Master Control" so that both "Radio Recording" and "Microphone Recording" are indicated.

Proceed as stated in "Microphone Recording" and "Re-recording."

## Playback:— QU7 & QU8

To play back after recording, remove the drive and recorder arm from the turntable spindle, and place on the pin at the right front of the cabinet. Remove the "Auxiliary Recording Turntable." Proceed as under "Manual" Phonograph operation.

**IMPORTANT:** Before playing the Automatic Phonograph after recording, make sure the Recording Turntable plate is removed.

If Automatic Mechanism jams during cycle for any reason, throw "Master Power Switch" "OFF", as the turntable "Motor Switch" will not cut off current to motor, while mechanism is in cycle.

**Acoustic Adaptor:**—An "Acoustic Adaptor" switch located at the right rear corner of the radio chassis can be used to adapt the instrument to different types of locations for phono reproduction, by varying the balance between high and low frequency response as desired.

## Public Address Use:—

**Microphone Pickup:**—Turn Power Switch "ON."

Turn "Master Control" to Public Address position.

If external speakers are connected, turn External Speaker Switch, located at the right hand rear corner of phonograph compartment, clockwise, to put these in operation.

Set "Microphone Volume Control" to give desired Volume in Speakers. If the Speakers in the cabinet are too loud and "Feedback" occurs, the volume on these speakers can be reduced by turning down the "Instrument Speaker Volume Control" located in back of the "External Speaker" switch.

**Radio or Record Program:**—If it is desired to send Radio programs or Record programs over the External Speaker system, the instrument is operated in the normal manner for "Radio" or "Phonograph" operation, and the "External Speaker" switch is then turned for "External Speaker" operation.

# Recording and Playback Notes

## IMPORTANT

The cutting point of the stylus must be in perfect condition in order to make good recordings.

The condition of the stylus point can not be determined by ordinary visual inspection. If the recordings are noisy or poor in quality, first try a new stylus.

The stylus cutting point can be ruined by dropping the cutter on the record, by cutting into the base metal of the recording blank, or by cutting into the paper label on the blank

Always stop the recorder before it reaches its inner limit as it will repeat in the last groove and may wear into the base metal, thereby ruining the stylus point. See that the instrument is perfectly level.

### CUTTER ADJUSTMENT

To adjust the stylus pressure for the correct depth and width of cut, the best procedure is to cut some "blank" grooves in a recording disc of the type that will be used: The stylus pressure can be regulated, by means of the adjustment screw on top of the cutter bracket, to produce the correct thickness of the hair-like cuttings. The cuttings should collect toward the center of the recording disc. If they collect toward the outside the stylus is not correctly inserted, and must be adjusted by removal and re-insertion. If the threads continue to collect toward the outside, use a new stylus.

The cuttings should be even, thin, hair-like threads about three-thousandths of an inch across or approximately the diameter of a human hair.

The groove width should almost equal, but not exceed, the distance between grooves. A magnifying glass is helpful in examining the grooves. If the grooves are too shallow, the phonograph needle will slide over them on playback. If the grooves are cut too deep, rumble will be excessive.

After examining the cuttings and the groove width, adjust the cutter pressure as required by means of the adjustment screw on top of the cutter bracket. Turn this clockwise to increase pressure and increase depth of groove. Turn counter-clockwise to decrease pressure and decrease depth of groove.

Check the new adjustment by running more blank grooves.

Check the cuttings and groove width each time a new stylus is inserted, and whenever a different tpe of recording disc is used. Due to variations in material composition and hardness among different types of discs, the same cutting-pressure adjustment will not give an equal depth of cut on all types. Thus, it may be necessary to change the adjustment previously set for one type of disc, when recording on a different type.

Excessive cutting pressure will cause rumble. The width of the groove should almost equal, but not exceed, the distance between grooves.

Check the groove width each time a new stylus is used, and each time a new disc is used.

When recording, use the maximum bass response, by turning the bass control to the maximum clockwise position.

On play-back, use the least bass response, by turning the Bass control to the maximum counter-clockwise position.

Be certain that the motorboard and mechanism is "floating" free from the cabinet.

# Recorder Service

**Cutter Head Drive:**—The cutting head drive screw (lead screw) should rotate freely and be free from end play. If end play is present loosen the jamb screw which locks the cone point bearing located at end away from driving gear and adjust this bearing until end play is eliminated (being careful not to cause binding), then tighten jamb screw.

**Cutter Head Mounting:**—Two cone pointed set screws support the cutter head and its mounting bracket. These should be adjusted to prevent end play but to permit free movement of the cutter head up and down.

**Record Threads:**—**Keep the drive** gears and lead screw free from record threads.

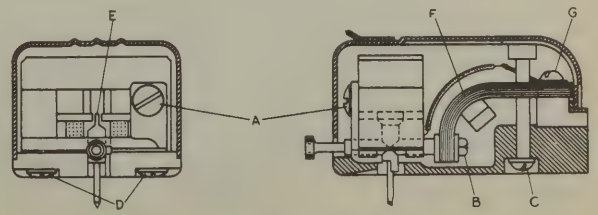
**Equalizing Groove Width:**—In order to keep the groove width cut at the inside and outside of record equal, it may be necessary to adjust the spindle bearing into which the swivel spindle of the recording arm is placed, and which is located at the right hand center of the phono board. To adjust this bearing loosen the set screw in the base and move bearing up or down as desired. If the grooves at the edge of record are shallower than those at center of record, lower the bearing. If grooves at edge of record are deeper than those at center of record, then raise the bearing.

**Lubrication:**—Keep the drive gears, lead screw, and other bearing surfaces well lubricated with Vaseline or Petroleum Jelly.

* **"Automatic" Cut-Off Switch Under Recorder Arm:**—When the Recorder Arm is swung in position over a record to make a recording, the weight of the arm is brought down on a switch mounted under the recorder arm swivel bearing, opening the switch and making the Automatic Phonograph inoperative.

This switch should be adjusted so that when the Recording Arm is on its rest, the switch is closed; i. e. the switch plunger is all the way up; and there should be about 1/32-inch clearance between the top of switch, and the swivel shaft. When the Recording Arm is in the recording position, the switch is open; i. e. the switch plunger is pushed down.

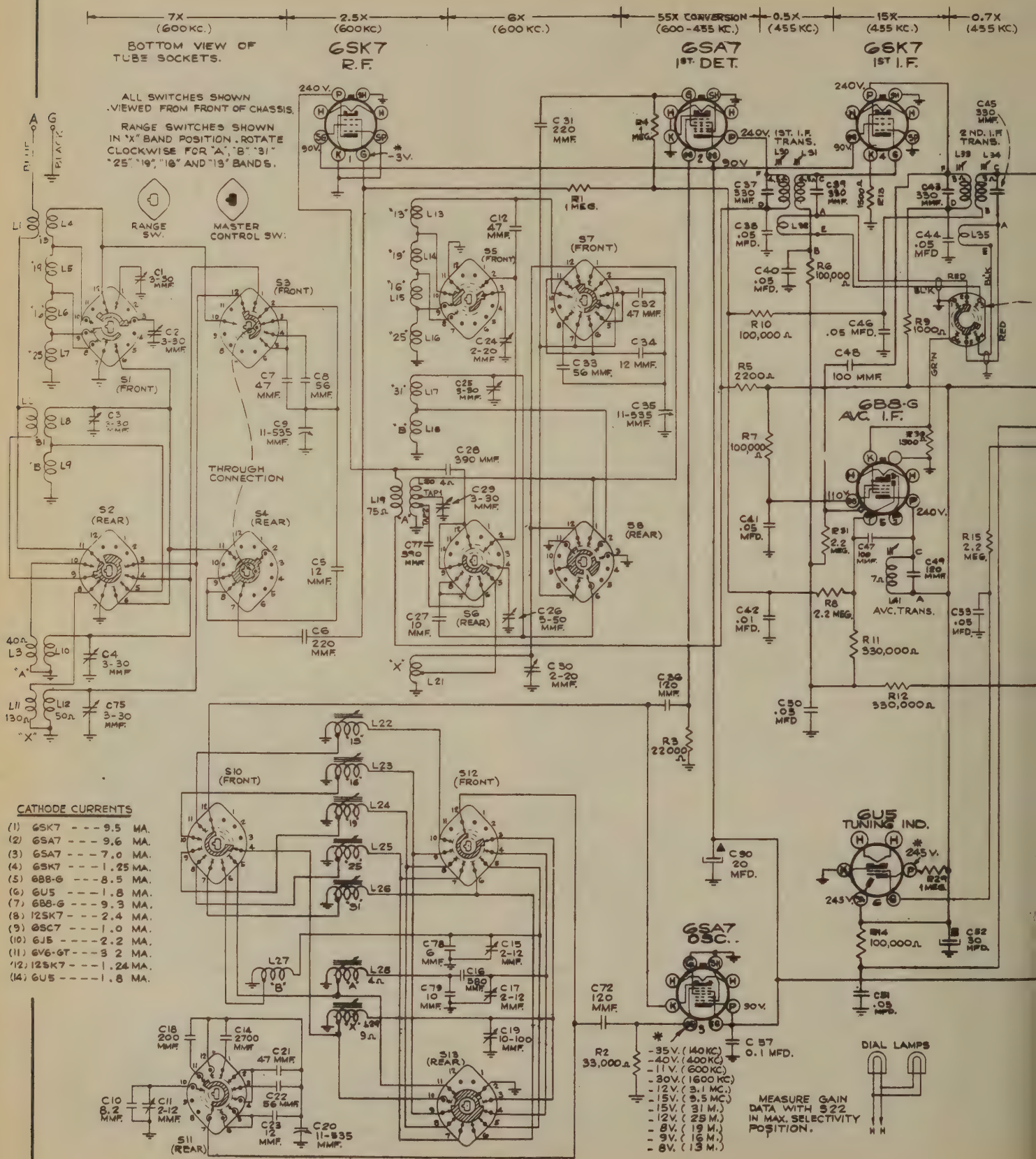
### Cutter Head:—




*Cutter Head*

The cutter head used is of an improved design. There is a centering spring attached to the armature to maintain proper adjustment and to provide a limiting effect on the movement of the armature.

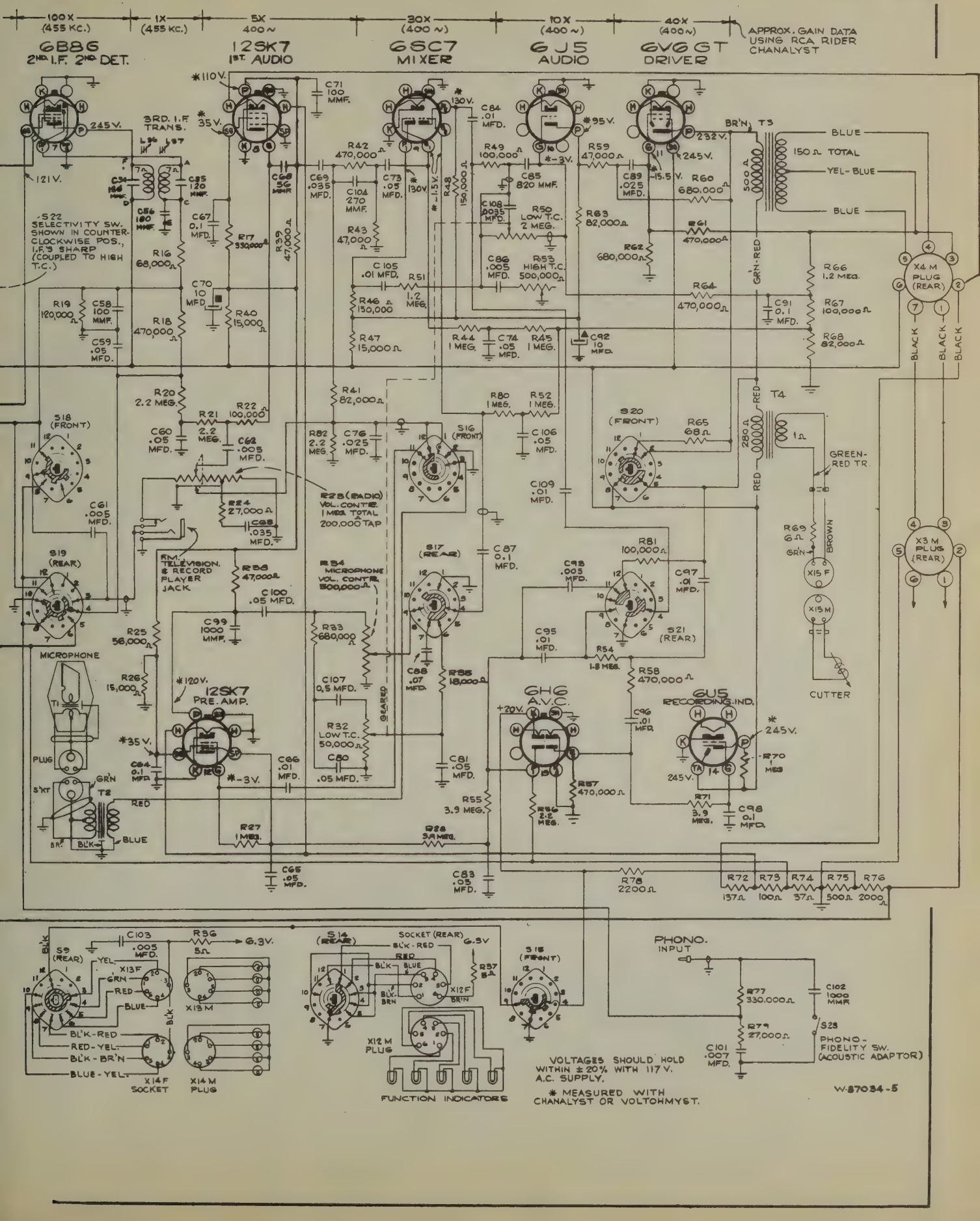
* *"Automatic" Cut-off switch - Used on Model QU-8 only*

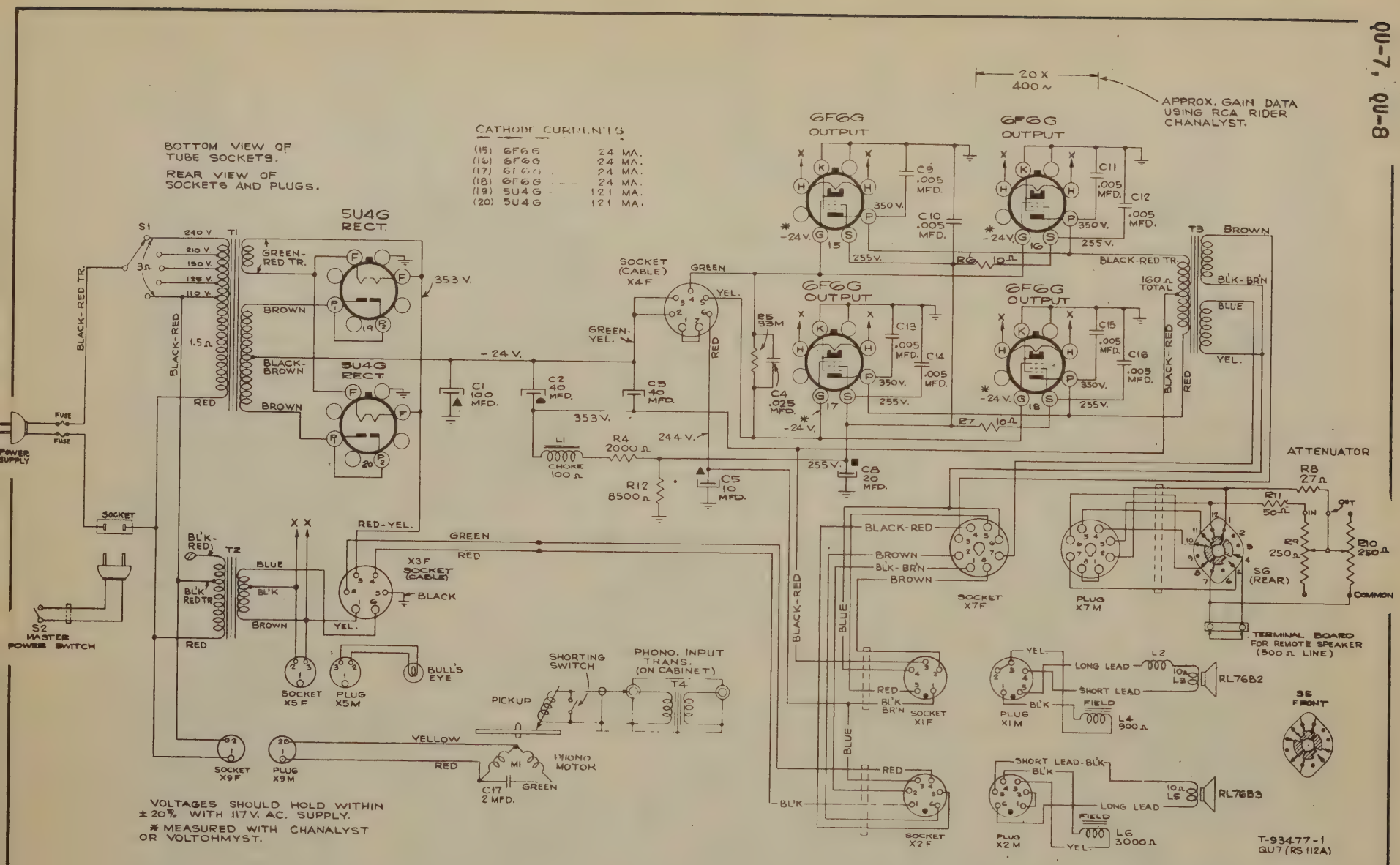



CATHODE CURRENTS

| | | |
|---|---|---|
| (1) | 6SK7 | 9.5 MA. |
| (2) | 6SA7 | 9.6 MA. |
| (3) | 6SA7 | 7.0 MA. |
| (4) | 6SK7 | 1.25 MA. |
| (5) | 6B8-G | 8.5 MA. |
| (6) | 6U5 | 1.8 MA. |
| (7) | 6B8-G | 9.3 MA. |
| (8) | 12SK7 | 2.4 MA. |
| (9) | 6SC7 | 1.0 MA. |
| (10) | 6J5 | 2.2 MA. |
| (11) | 6V6-GT | 3 2 MA. |
| (12) | 12SK7 | 1.24 MA. |
| (14) | 6U5 | 1.8 MA. |

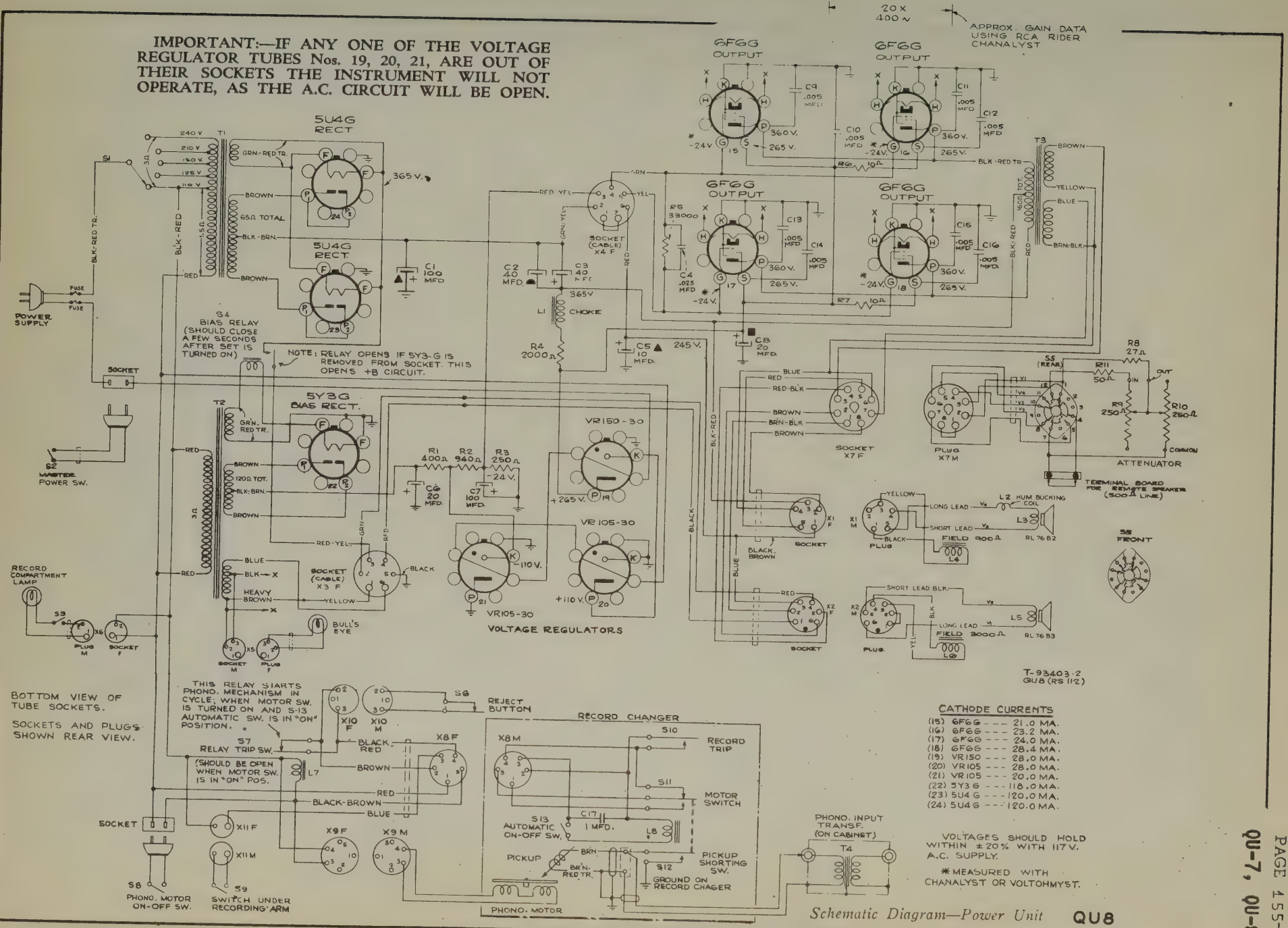
*Schematic Diagram—R. F. Unit*

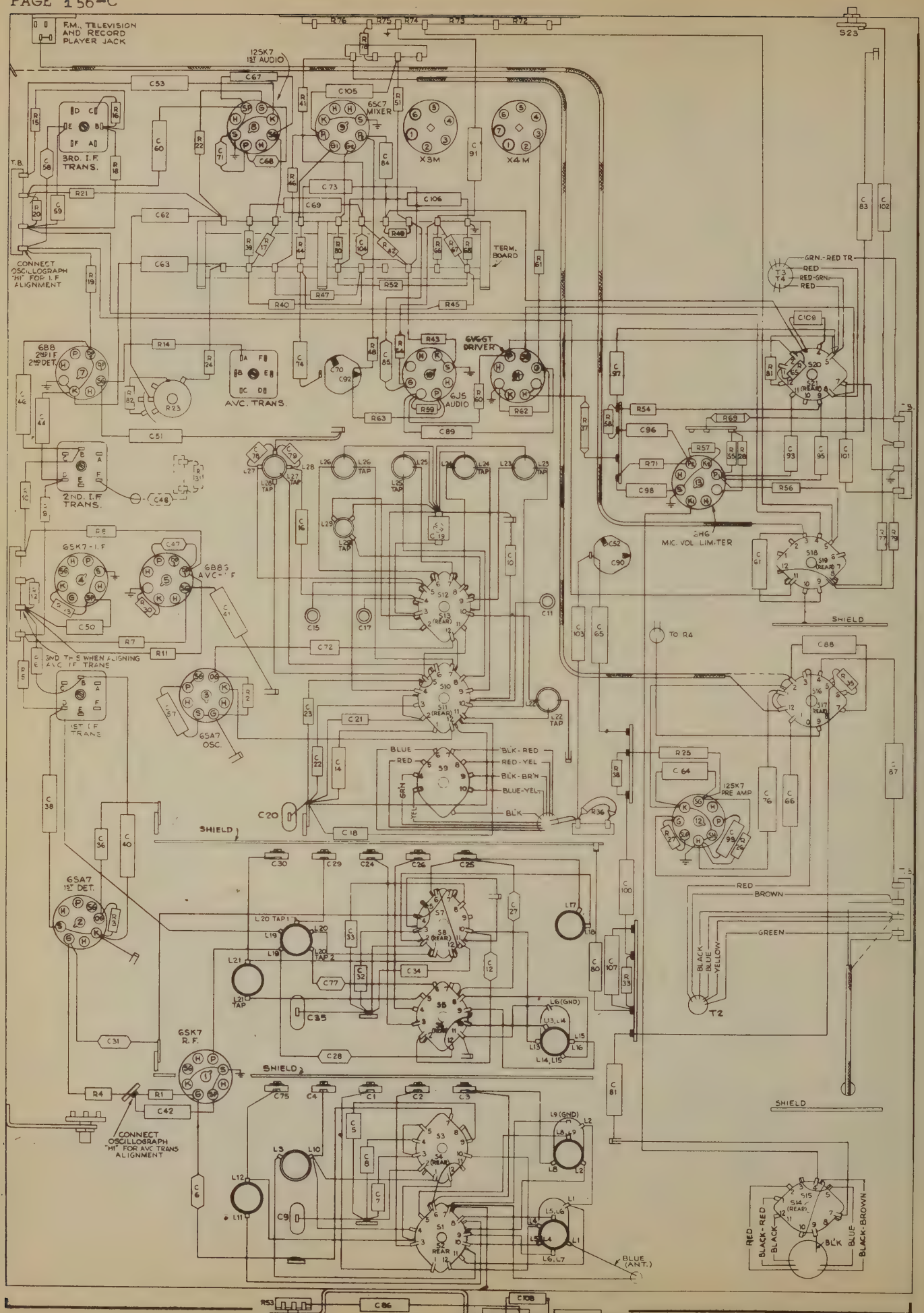

100X (455 KC.)
1X (455 KC.)
5X 400 ~
30X (400 ~)
10X (400 ~)
40X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6BB6 2ND I.F. 2ND DET.
12SK7 1ST. AUDIO
6SC7 MIXER
6J5 AUDIO
6V6GT DRIVER
3RD. I.F TRANS.
S22 SELECTIVITY SW. SHOWN IN COUNTER-CLOCKWISE POS., I.F.'S SHARP (COUPLED TO HIGH T.C.)
R23 (RADIO) VOL. CONTR. 1 MEG. TOTAL 200,000 TAP
R34 MICROPHONE VOL. CONTR. 500,000Ω
TELEVISION & RECORD PLAYER JACK
MICROPHONE
12SK7 PRE. AMP.
6H6 A.V.C.
6U5 RECORDING IND.
T1
T2
T3
T4
BR'N
BLUE
150Ω TOTAL
YEL-BLUE
BLUE
GRN-RED
BLACK
BLACK
BLACK
RED
RED
GREEN-RED TR.
BROWN
GRN
CUTTER
X4M PLUG (REAR)
X3M PLUG (REAR)
X15F
X15M
S18 (FRONT)
S19 (REAR)
S16 (FRONT)
S17 (REAR)
S20 (FRONT)
S21 (REAR)
GEARED
R69 6Ω
R70 1 MEG
R71 3.9 MEG.
R72 137Ω
R73 100Ω
R74 37Ω
R75 500Ω
R76 2000Ω
R78 2200Ω
S9 (REAR)
X13F
X13M
X14F SOCKET
X14M PLUG
S14 (REAR)
SOCKET (REAR)
X12F
X12M PLUG
FUNCTION INDICATORS
S15 (FRONT)
PHONO. INPUT
R77 330,000Ω
R79 27,000Ω
C101 .007 MFD.
C102 1000 MMF.
S23 PHONO-FIDELITY SW. (ACOUSTIC ADAPTOR)
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
W-87034-5




*Schematic Diagram of Power Amplifier and Power Supply.*

## QU7


IMPORTANT:—IF ANY ONE OF THE VOLTAGE REGULATOR TUBES Nos. 19, 20, 21, ARE OUT OF THEIR SOCKETS THE INSTRUMENT WILL NOT OPERATE, AS THE A.C. CIRCUIT WILL BE OPEN.
20 X 400 ∿
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6F6G OUTPUT
6F6G OUTPUT
6F6G OUTPUT
6F6G OUTPUT
5U4G RECT.
5U4G RECT.
5Y3G BIAS RECT.
POWER SUPPLY
MASTER POWER SW.
S4 BIAS RELAY (SHOULD CLOSE A FEW SECONDS AFTER SET IS TURNED ON)
NOTE: RELAY OPENS IF 5Y3-G IS REMOVED FROM SOCKET. THIS OPENS +B CIRCUIT.
SOCKET
CHOKE
VR150-30
VR105-30
VR105-30
VOLTAGE REGULATORS
SOCKET X7F
PLUG X7M
ATTENUATOR
TERMINAL BOARD FOR REMOTE SPEAKER (500Ω LINE)
SOCKET
PLUG
FIELD 900Ω
FIELD 3000Ω
RL 76 B2
RL 76 B3
L2 HUM BUCKING COIL
RECORD COMPARTMENT LAMP
BULL'S EYE
BOTTOM VIEW OF TUBE SOCKETS.
SOCKETS AND PLUGS SHOWN REAR VIEW.
THIS RELAY STARTS PHONO. MECHANISM IN CYCLE; WHEN MOTOR SW. IS TURNED ON AND S-13 AUTOMATIC SW. IS IN "ON" POSITION.
S7 RELAY TRIP SW.
(SHOULD BE OPEN WHEN MOTOR SW. IS IN "ON" POS.
REJECT BUTTON
RECORD CHANGER
RECORD TRIP
MOTOR SWITCH
S13 AUTOMATIC ON-OFF SW.
PICKUP
PICKUP SHORTING SW.
GROUND ON RECORD CHAGER
PHONO. MOTOR
PHONO. INPUT TRANSF. (ON CABINET)
S8 PHONO. MOTOR ON-OFF SW.
S9 SWITCH UNDER RECORDING ARM
CATHODE CURRENTS
(15) 6F6G --- 21.0 MA.
(16) 6F6G --- 23.2 MA.
(17) 6F6G --- 24.0 MA.
(18) 6F6G --- 28.4 MA.
(19) VR150 --- 28.0 MA.
(20) VR105 --- 28.0 MA.
(21) VR105 --- 20.0 MA.
(22) 5Y3G --- 118.0 MA.
(23) 5U4G --- 120.0 MA.
(24) 5U4G --- 120.0 MA.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. A.C. SUPPLY.
*MEASURED WITH CHANALYST OR VOLTOHMYST.
T-93403-2
QU8 (RS 112)
Schematic Diagram—Power Unit QU8




*Bottom View—R. F. Unit—Showing Location of Parts*

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

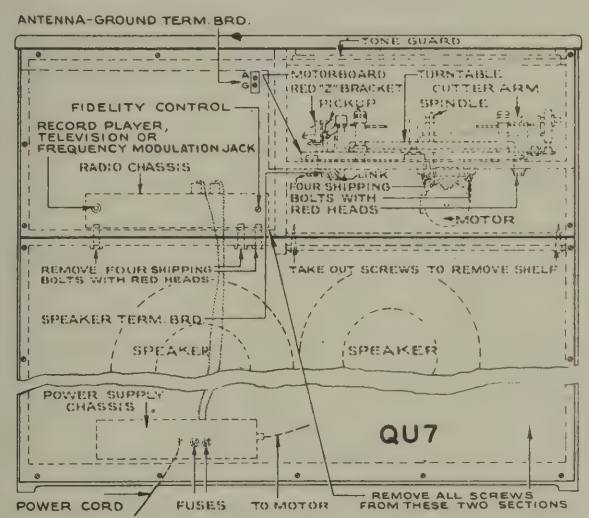
**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

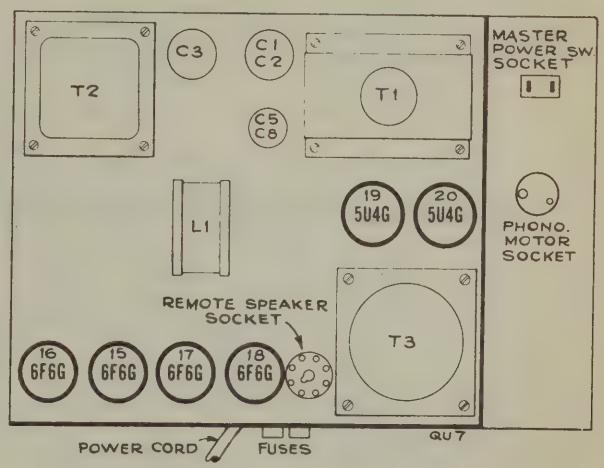
**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

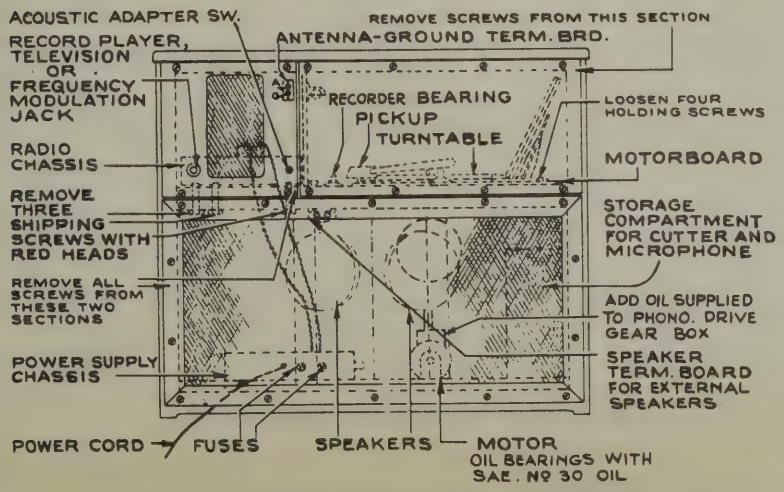
**Precautionary Lead Dress:—**

(1) All oscillator leads should be kept as short as possible.
(2) Lead from No. 8 on S1 must be held to 3 in. length and dressed toward the bottom end of coils, away from coil windings.
(3) Lead from No. 9 on S1 must be held to 3 in. length and dressed toward the bottom end of coils, away from coil windings.
(4) Lead from No. 5 on S2 must be held to 5 in. length.
(5) Lead from No. 8 on S5 must be held to 4¼ in. length.
(6) Lead from Det. coil L17 to trimmer must be held to 2¼ in. length.
(7) Lead from Det. coil L18 to No. 2 on S8 must be held to 5⅜ in. length.
(8) The leads from the top and arm of the microphone volume control should be dressed away from the pilot light leads and toward the pre-amplifier shield.
(9) The condenser from the volume control arm to the first audio tube must be shielded and the lead on the tube side as short as possible.
(10) The leads to the selectivity switch must be dressed along the side of the chassis away from the R.F. coils.
(11) Keep pilot light leads as far as possible away from oscillator coils.
(12) Dress leads to low frequency tone control on outside of chassis under bracket.
(13) The long ground lead from the oscillator heater must be kept away from all condensers, resistors, and leads to RF tubes.
(14) Dress all filament leads away from oscillator and detector grid lugs.
(15) C-14 (2700 mmf) and C-72 (120 mmf) must be dressed toward A osc. trimmer, C-17.

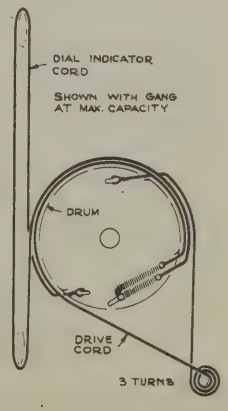


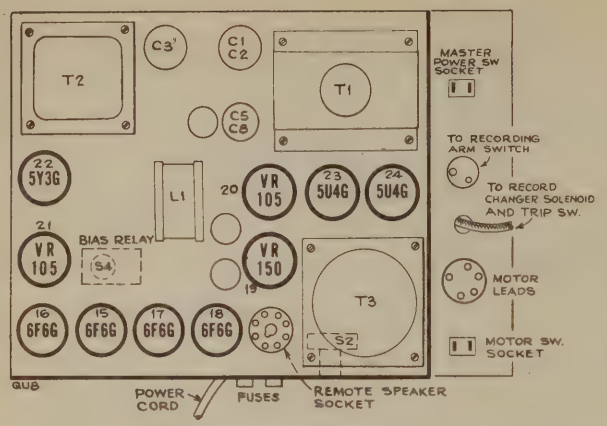

*Top View—Power Unit* **QU7**



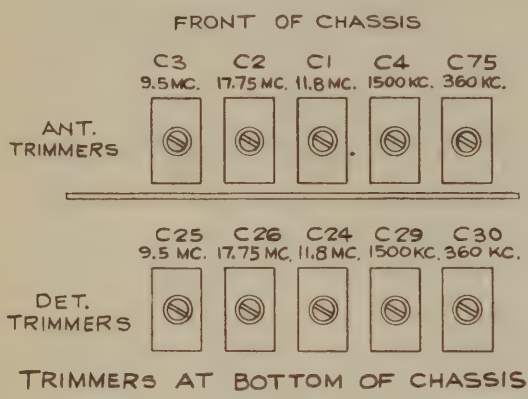

*Rear View of Instrument* **QU8**

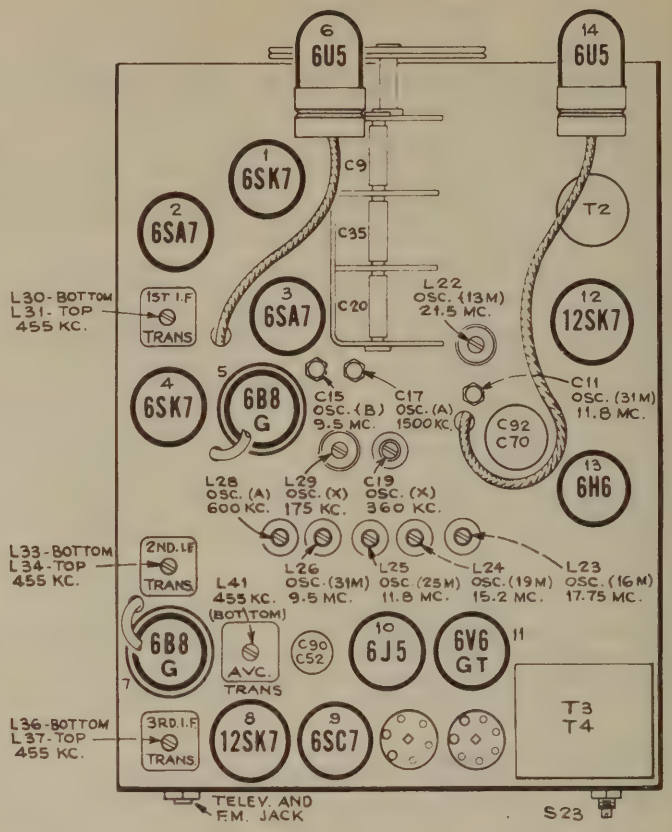



*Tuning Drive Cord Assembly*

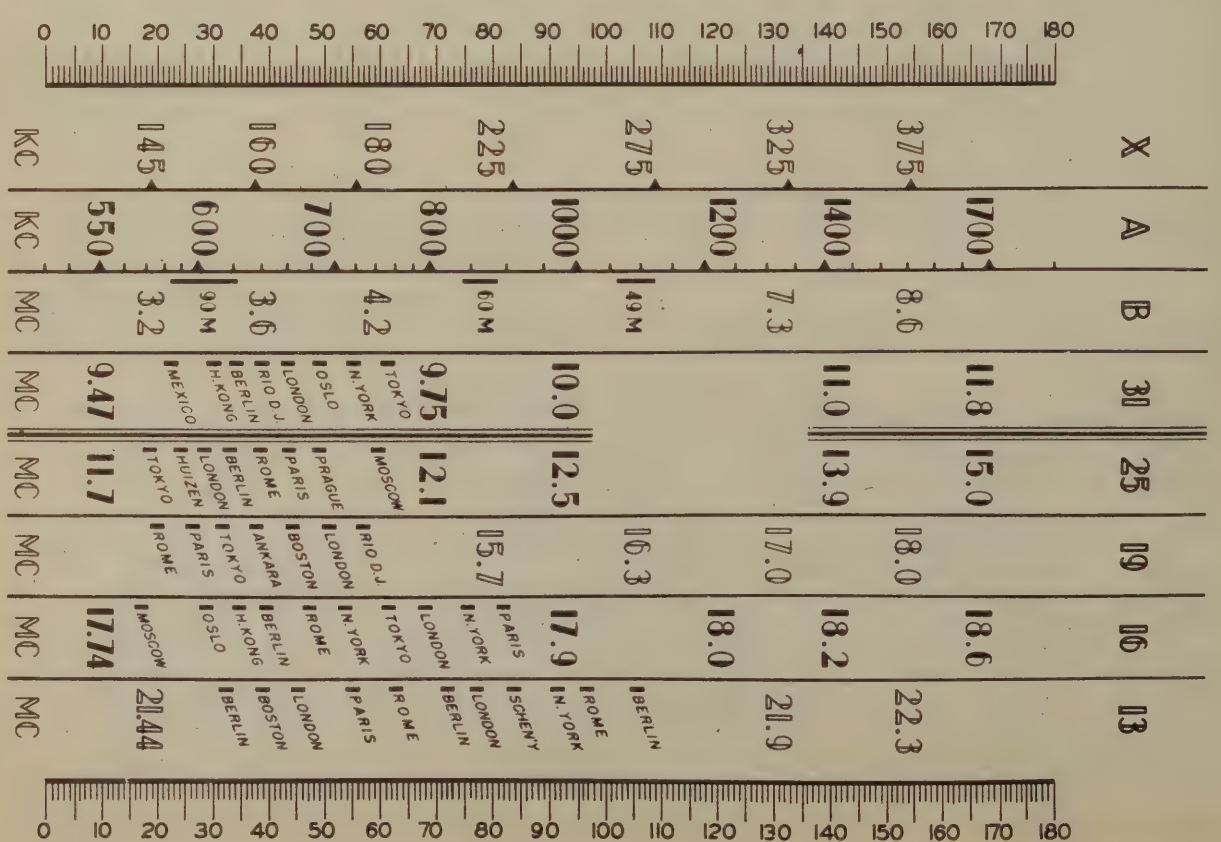



*Top View—Power Unit* **QU8**




*Tube and Trimmer Locations*


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
KC 145 160 180 225 275 325 375 X
KC 550 600 700 800 1000 1200 1400 1700 A
MC 3.2 90 M 3.6 4.2 60 M 49 M 7.3 8.6 B
MC 9.47 MEXICO H.KONG BERLIN RIO DJ LONDON OSLO N.YORK TOKYO 9.75 10.0 11.0 11.8 30
MC 11.7 TOKYO HUIZEN LONDON BERLIN ROME PARIS PRAGUE MOSCOW 12.1 12.5 13.9 15.0 25
MC ROME PARIS TOKYO ANKARA BOSTON LONDON RIO DJ 15.7 16.3 17.0 18.0 19
MC 17.74 MOSCOW OSLO H.KONG BERLIN ROME N.YORK TOKYO LONDON N.YORK PARIS 17.9 18.0 18.2 18.6 16
MC 20.44 BERLIN BOSTON LONDON PARIS ROME BERLIN LONDON SCHENY N.YORK ROME BERLIN 20.9 22.3 13
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Dial Scale and Calibration Scale*

| Step | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | Turn selectivity control maximum counter-clockwise for maximum selectivity. | | | |
| 2 | 6B8G 2nd I-F grid in series with .01 mfd. | 455 kc | "A" Band quiet point between 550-750 kc | L37, L36 Third I-F Transformer |
| 3 | 6SK7 1st I-F grid in series with .01 mfd. | | | L34, L33 Second I-F Transformer |
| 4 | 6SA7 1st Det. grid in series with .01 mfd. | | | L31, L30 First I-F Transformer |
| 5 | With selectivity control in broad position retouch L37, L36 for selectivity curve 2. | | | |
| 5A | With selectivity control in sharp position see that curve 1 has not changed appreciably. | | | |
| 6 | 6SA7 1st Det. grid in series with .01 mfd. | 455 kc | "A" Band quiet point between 550-750 kc | L41 AVC Transformer See Note 1 |
| 7 | Antenna Terminal in series with 200 mmfd. | 360 kc | "X" Band 360 kc (149°) | C19 (osc.)** C30 (det.) C75 (ant.) |
| 8 | | 175 kc | "X" Band 175 kc (51°) | L29 (osc.) (Rock-in) |
| 9 | Repeat steps 7 and 8. | | | |
| 10 | Antenna Terminal in series with 200 mmfd. | 1,500 kc | "A" Band 1,500 kc (150.5°) | C17 (osc.) C29 (det.) C4 (ant.) |
| 11 | | 600 kc | "A" Band 600 kc (26°) | L28 (osc.) (Rock-in) |
| 12 | Repeat steps 10 and 11. | | | |
| 13 | Antenna Terminal in series with 300 ohms | 9.5 mc | "31M" Band 9.5 mc (21.5°) | L26 (osc.)*** C25 (det.) C3 (ant.) |
| 14 | | 11.8 mc | "31M" Band 11.8 mc (169.5°) | C11 (osc.)*** |
| 15 | | Repeat steps 13 and 14 until dial tracks correctly. | | |
| 16 | | 9.5 mc | "B" Band 9.5 mc (172.5°) | C15 (osc.)*** |
| 17 | | 11.8 mc | "25M" Band 11.8 mc (36°) | L25 (osc.)*** C24 (det.) C1 (ant.) |
| 18 | | 15.2 mc | "19M" Band 15.2 mc (37°) | L24 (osc.)*** |
| 19 | | 17.75 mc | "16M" Band 17.75 mc (28°) | L23 (osc.)**** C26 (det.) C2 (ant.) |
| 20 | | 21.5 mc | "13M" Band 21.5 mc (59°) | L22 (osc.)**** |

NOTE 1: Connect oscilloscope to junction of R8 and C42. Also short junction of R11 and R12 to ground.

** Core of L29 should be approximately ⅝-inch out before adjusting C19.

*** Use minimum capacity or inductance peak.

**** Use maximum inductance peak.

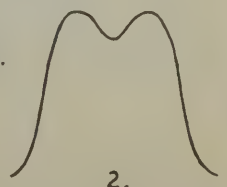
**NOTE.—Oscillator tracks above all signals except on 16 and 13 meter bands.**

1.

*I.F. Selectivity Curves*

*At Left—"Sharp"*

*At Right—"Broad"*



2.

# Public Address

External speakers may be connected to the terminal board located at the rear of the cabinet under the phono compartment. The total impedance of all the speakers connected to the instrument in parallel or series should be approximately 500 ohms.

RECORD CHANGER SERVICE DATA QU7 IS VERY SIMILAR TO RP-153, REFER TO SERVICE NOTE ON RP-153

## Record Changer Service Data MODEL QU8

### LUBRICATION.

Due to its careful design and precise workmanship, this record changer requires a minimum of oiling.

About once each year a light coat of vaseline or petroleum jelly should be applied to all moving surfaces which were coated with graphite at the factory.

A very light coat of vaseline should be applied to the surfaces of the magazine, indicated at "E" in Fig. 2. It is best to apply this coating every six months. The vaseline should be applied with, and removed by, the fingers, on the magazine faces. DO NOT USE EXCESSIVE AMOUNTS OF LUBRICANT ANYWHERE ON THE RECORD CHANGER.

A good grade of machine oil, not too light, should be used on the sliding clutches, reverse cam shaft and all eccentric and shoulder screws.

NEVER OIL THE "DUREX" BUSHINGS (one of which is shown as No. 17 in Fig. 1), AS THIS WILL CAUSE THEM TO DISINTEGRATE.

Once each year the motor oil cups should be oiled with a good grade of motor oil. At the same time the gear box should be inspected and a ¼ oz. of SAE No. 10 oil should be maintained in this unit.

### RECORD SIZE LIMIT.

The record changer will play any 10" or 12" record of standard size. The minimum size for 12" records is 11 7/8". The minimum size for 10" records is 9 27/32". Records smaller than these limits are very apt to miss centering over the turntable spindle and in most cases are broken.

These record changers will automatically trip on any record having an automatic stop change groove, either spiral or oscillating, where the blank space in the center of the record is not more than 6½" in diameter.

Always inspect the records to see that no rough edges are present. Occasionally you will find a record which has a rough outside edge. This rough edge will greatly interfere with the satisfactory performance of the record changer. A small piece of No. 00 sandpaper will assist you greatly in removing this rough edge.

### DRIVE CLUTCH.

The phono drive clutch is located on the drive shaft just above the reduction gear box. The clutch should be adjusted so that there is no slippage in the clutch during a cycle of the mechanism, yet the clutch should slip if the turntable is stopped by hand. To adjust clutch, loosen the two nuts above the clutch on the drive shaft, and move the lower nut down the shaft for more pressure in the clutch, or move the lower nut up for less clutch pressure.

### REFERENCE TABLE FOR AUTOMATIC MECHANISM ADJUSTMENTS

| Symptom | Check and Correct |
|---|---|
| Does not play automatically. | Solenoid relay circuit and S2, S5, S6, L1, L8. Section 19, 20. S4 under recording arm open. |
| Keeps on repeating automatically. | Check S1, S2. Section 15, 26, 27. |
| Trips before record is finished. | Section 27. |
| Does not trip at end of record. | Section 27, 26. |
| Does not feed new record.* | Section 2, 3, 1 |
| Record does not center on turntable. | Section 1, 7, 9, 10. |
| Does not reverse records properly. | Section 1, 8, 11, 12, 13, 28. |
| Does not reverse record. | Section 1, 8, 18, 28, 25. |
| Pickup does not land correctly on record. | Section 5, 6, 16, 17, 14. |
| Chatter while changing record. | Section 21, or short circuit in relay trip system. |
| Ringing noise while changing record. | Section 4. |
| Record Selector Lever does not work properly. | Section 25, 23, 18. |

* Make sure record is not warped or chipped or has rough edges.

**NOTE: When Automatic Mechanism jams, shut Master "Power" Switch "OFF" before clearing the jam, as the turntable "Motor Switch" does not shut power to the motor off while the mechanism is in cycle.**

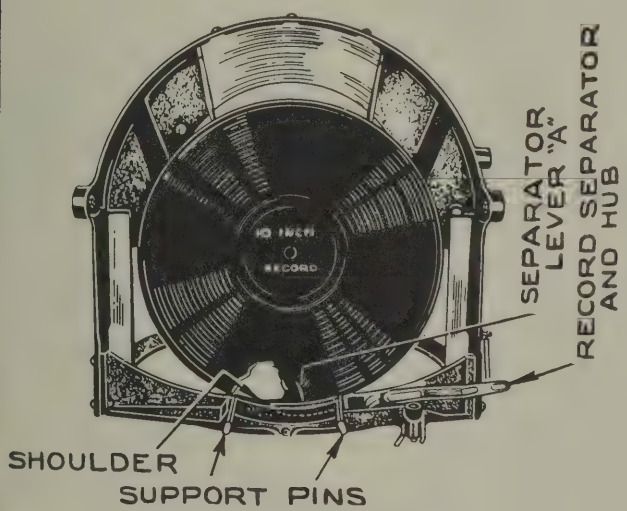
**Note:**—When mechanism jams upon first being played after being unpacked, check to see whether the record magazine is lined up as stated in Adjustment 7. Also check to see if the Record Reverse Arm Lock No. 46 Fig. 2 is **on top** of the Record Reverse Arm Lock Stop No. 48 Fig. 2.

## 1. MAGAZINE LINK ADJUSTING SCREWS ("D") (Fig. 1).

The record magazine should always come back snugly against the magazine stop screw, "C," Fig. 1. If it does not, it is necessary to loosen the two set screws ("D," Fig. 1) to a sliding tension and run the record changer through a cycle of change. When the magazine has reached the horizontal position, as shown in Fig. 1, press down on the lower end of the magazine; this will lengthen the link assembly. Then when the magazine returns to its normal position, the magazine link will adjust itself so that the magazine is snugly against the stop screw. Then tighten the magazine link screws "D."

## 2. RECORD SEPARATOR ADJUSTMENT.

The separator stop "J," Fig. 1, should be adjusted so that a small 10" record will positively clear the knife portion of the separator lever as shown in the following illustration. A




***Record Magazine—Loading***

standard to use is to make certain that there is approximately 1/32" clearance between the edge of the small record and the point of the separator lever, as shown at "A" in illustration below. However, it may be necessary to vary one way or the other from this measurement, depending on whether or not the slotted end of the record separator lever goes over the hook (7) (Fig. 1) without binding.

## 3. RECORD SEPARATOR HOOK ADJUSTMENT.

After adjusting the record separator it will be necessary to check the record separator hook (7) (Fig. 1) to see that it enters the slot in the record separator without binding. This hook is threaded and by loosening the locknut the hook can be turned in either direction, to raise or lower it. After the correct adjustment is obtained, tighten the locknut.

It should never be necessary to change these adjustments on record changers unless they have been tampered with by an inexperienced person.

## SEPARATOR HOOK AND ARM (7) (Fig. 7).

Be sure set screw "K" in Fig. 4 is screwed all the way in.

## 4. RECORD MAGAZINE BUSHING (13) (Fig. 1).

If a ringing noise is heard while the instrument is changing records, i. e., such a noise that might be made by a spring, it will be found that the Durex bushing (13) (Fig. 1) is too tight, in which case it will be necessary to loosen the lock nut of the holding bolt, and back the bolt out, from a quarter to a half turn, then tighten the lock nut.

## 5. TO ADJUST THE TONE ARM HEIGHT.

To adjust the tone arm height, first place a 12" record on the turntable and adjust the tone arm stop lever (18) (Fig. 1) so that the record hits the rubber roller (21) (Fig. 1) in the center. Start the record changer through a cycle and stop it when the tone arm lever hook (22) (Fig. 1) just touches the stop lever assembly. In this position adjust the tone arm height so that the top of the stop lever is the same height as the center of the hook. This adjustment is made by loosening the two Allen set screws at the rear of the tone arm. These Allen set screws are accessible by raising the tone arm by hand. After making the height adjustment it is necessary to make certain that there is a clearance of approximately 5/8" between the pickup head and the record tray. This distance may be checked between the bottom of the record tray and the bottom of the pickup when the record tray is approximately parallel with the pickup.

## 6. TO ADJUST THE STOP LEVER HOOK (22) (Fig. 1).

Always adjust the tone arm position on a 12" record before adjusting for a 10" record. Adjust the tone arm stop lever hook (22) (Fig. 1) by moving it in or out. This hook is locked in place by a set screw in the stud whose nut is shown in Fig. 1 as No. 2. This set screw is at the bottom of this stud. Adjust the hook so that it will pass through the notch in the pickup arm lever (18) (Fig. 1) without binding against the top or bottom of the notch, when in the playing position. With a 12" record on the turntable, the rubber roller (21) (Fig. 1) against the edge of the record and the stop lever hook (22) against the blade of the stop lever (18) the needle should stop on the record exactly 3/32" from the edge of the record.

With the record changer in exactly the same position as described above, and with a 10" record on the turntable and the hook (22) (Fig. 1) against the blade, the stop lever should allow the needle to stop on the record 3/32" from the edge of the 10" record. A 6-32 screw shown in Fig. 1 is provided for making this adjustment, simply by screwing it in or out. A check should be made for clearance between the roller and the tray, this roller should never bind on the record tray. This can be taken care of by slightly bending the tone arm stop lever (18) (Fig. 1) up or down. If it is necessary to bend the stop lever it will be necessary to readjust for 12" records.

## 7. THE ADJUSTMENTS OF THE RECORD MAGAZINE.

Before attempting to adjust the magazine, be sure that the

**QU-7, QU-8**

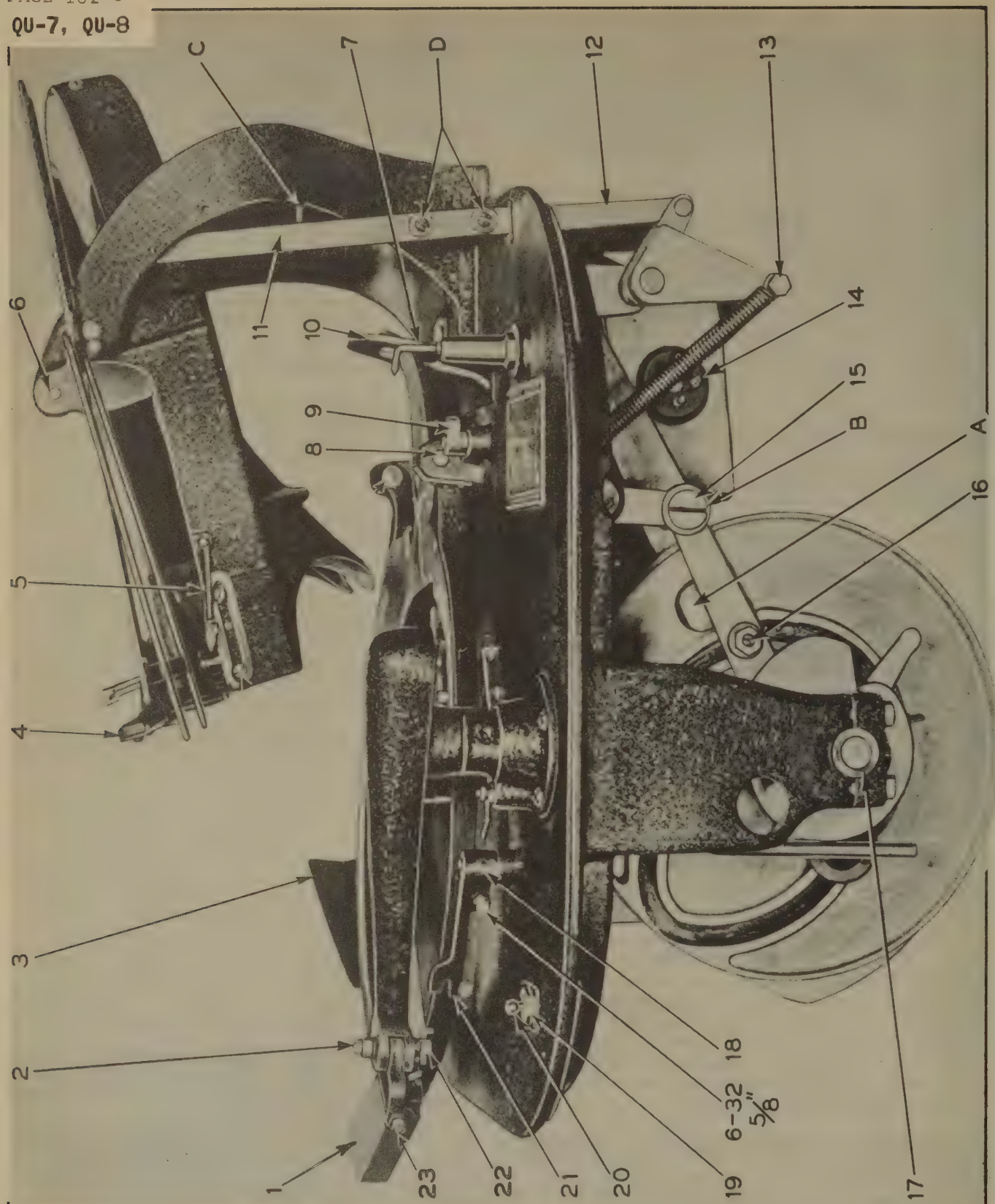



**Fig. 1**

| Reference No. | Stock No. | Description |
|---|---|---|
| 1 | 37293 | Pickup Housing |
| 2 | 38068 | 3/4"—28 Hex. Cap Nut |
| 3 | 38084 | Record Tray Shield Felt—Outer |
| 4 | 38117 | Record Reverse Arm and Fork Assembly |
| 5 | 38044 | Spring—Separator |
| 6 | 38017 | Pin—Magazine Pivot |
| 7 | 38116 | Separator Hook and Arm Assembly |
| 8 | 38018 | Pin—Record Tray Pivot |
| 9 | 38119 | Reverse Pinion and Crank Assembly |
| 10 | 38138 | Record Bumper Guide and Felt Assembly |
| 11 | 38075 | Magazine Link Upper |
| 12 | 38076 | Magazine Link Lower |
| 13 | 38057 | Record Magazine Bushing |
| 14 | 38113 | Chassis Plug |
| 15 | 38006 | Shoulder Screw — Record Tray Slide |
| 16 | 38024 | Pin—Record Tray Slide |
| 17 | 38055 | Main Shaft Bushing |
| 18 | 38131 | Pickup Arm Stop Lever Assembly (Specify color) |
| 19 | 38005 | Escutcheon Plate Off-On |
| 20 | 38001 | Switch, Automatic |
| 21 | 38094 | Stop Lever Roller Tubing |
| 22 | | Pickup Arm Lever Hook |
| 23 | 38069 | Lock Nut for Pivot Screw |

NOTE: In ordering any part that is painted, please specify color wanted.

center of the magazine pivot pins (6) (Fig. 1) is 8⅜" above the base plate. This height is very important and we recommend checking the height of the right hand pin, when looking at the magazine, before any adjustments are made.

The record magazine is positioned by moving it sideways on its bearing or pivot pins. The two set screws underneath the pivot pins lock the magazine in position. Loosen these set screws, then see that the left hand side of the record reverse assembly fork (part of 4, Fig. 2) is between 1/32" and 1/16" inside the left hand side of the Reverse crank, when looking at the magazine. That is, the left hand edge of the record reverse fork is about 1/32" or 1/16" to the right of the left hand edge of the crank. After moving the magazine, lightly set up the set screws. Then with the selector arm in the "Repeat" position swing the record reverse arm around in front of the magazine, to see whether the record guide strikes either of the record support pins (55) (Fig. 2). If the guide strikes either of the support pins it will be necessary to bend the pin away from the guide so they can not strike. If it is necessary to bend either pin, set the control lever in the "Repeat" position, then raise the record tray by hand, with a 10" record on it, observing the way the record strikes the support pins, the record should hit both pins about 1/16" from the end of the pin; if it does not it will again be necessary to adjust the pin until the record hits both pins an equal distance from the ends. If it is necessary to bend the pins, check the clearance between the record guide arms and the pins and between the arm carrying the record guide and the right hand pin. Also if the magazine has been shifted it is necessary to see that the two points, which extend downward from the magazine, have ample clearance in the channels, in the record tray, which are provided for their passage. If there is possibility of the points striking it probably means the magazine has been shifted too much.

If the magazine has been adjusted, it is also necessary to see that the record separator hook (7) (Fig. 1) does not bind in the slot in the end of the record separator arm (45) (Fig. 2). If it does the section covering these parts give the adjustment.

## 8. MAGAZINE STOP SCREW.

The magazine stop screw "C," Fig. 1, should be adjusted so that the crank pin (part of 9, Fig. 1) is approximately 1/16" from the edge of the record reverse arm fork (part of 4, Fig. 2) which is furtherest from the magazine, when the record reverse guide is in front of the magazine, that is, in the reversing position.

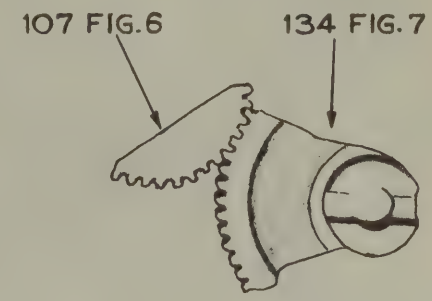
## 9. TO LOCATE AND ADJUST THE RECORD TRAY (29) (Fig. 2).

In assembling the record tray to the record changer, the first tooth of the driver quadrant (107) (Fig. 3) should mesh with the second tooth of the driven quadrant of the tray as shown.

With the two gears properly meshed, loosen the Allen set screws which hold pins No. 8, Fig. 1, in place. This will allow you to move the record tray sidewise, adjust tray sidewise until the turntable spindle is exactly in the center of the 10" record level of the record tray. (The 10" record level is that part of the tray where the felts No. 24 are indicated in Fig. 2.)

With the control lever in the "one side" position, run the record changer through its cycle until the large hole in the main cam is exactly half way past the upper edge of the record tray cam follower, as shown at "A," figure 1. At this position, the points of the ten-inch felts (24) (Fig. 2) should be level with the top of the turntable felt. If this tray is too low or too high, it may be adjusted to the proper level by loosening the eccentric screw (15) (Fig. 1) "B" and turning this screw until the proper level is obtained. Be sure to tighten the lock nut after adjustment.

If the tray is too high, at this position, the ten-inch records will not be centered over the turntable spindle. If the record tray is too low, the ten-inch records will slide out over the ten-inch tray shoulder and not properly center.




## 10. TO ADJUST THE VERTICAL BUMPER GUIDE (10) (Fig. 2).

This guide is located back of the magazine cross bar (33) (Fig. 2). After the records are separated from the magazine they are guided in dropping off the separator so they hit the center of the record bumpers (31) (Fig. 2). This vertical bumper guide also guides the records when the elevating hook, on the rear of the record tray lifts the record. The vertical bumper should be set back just far enough to allow a 12" record to drop onto the record bumpers freely. The lower part of the vertical bumper, which extends into the record well, should extend toward the center of the well rubber bumpers far enough to make sure that the upper edges of the records fall behind the points of the upper record support (39) (Fig. 2). This adjustment is not critical. In most cases it will be found that the upper end of the vertical bumper will just clear the elevating hook on the rear of the tray. In cases where it is found that 10" records are chipping about the edges, due to bouncing against the points of the upper record support (39) (Fig. 2) it will be necessary to bend the vertical bumper (10) (Fig. 2) back at the top to a point where it just barely clears the elevating hook at the rear of the tray. It should never be bent back far enough to raise the front of the tray.

## 11. RECORD REVERSE GUIDE (41) (Fig. 2).

With a 12" record in the magazine the record reverse guide assembly (41) (Fig. 2) should be parallel with the record when in the reversing position, in front of the magazine.

If the record reversing assembly is parallel with a 12" record as above, it should come around and lay against the reverse guide pin tubing (42) (Fig. 2), if the eccentric cam (77) (Fig. 4) is properly adjusted. This cam can be adjusted, by loosening the screw through the cam and turning it so that the record reversing assembly returns to the reverse guide pin tubing. Care should be taken when making this adjustment so that the crank pin (part of 9, Fig. 1) does not hold the reverse guide away from the pin tubing. This cam should be turned so that the reverse guide assembly just touches the pin tubing; if the cam is turned too far it will allow the reverse guide assembly to hit the pin tubing, but in the reversing position the assembly will not be able to assume a position parallel with a 12" record.

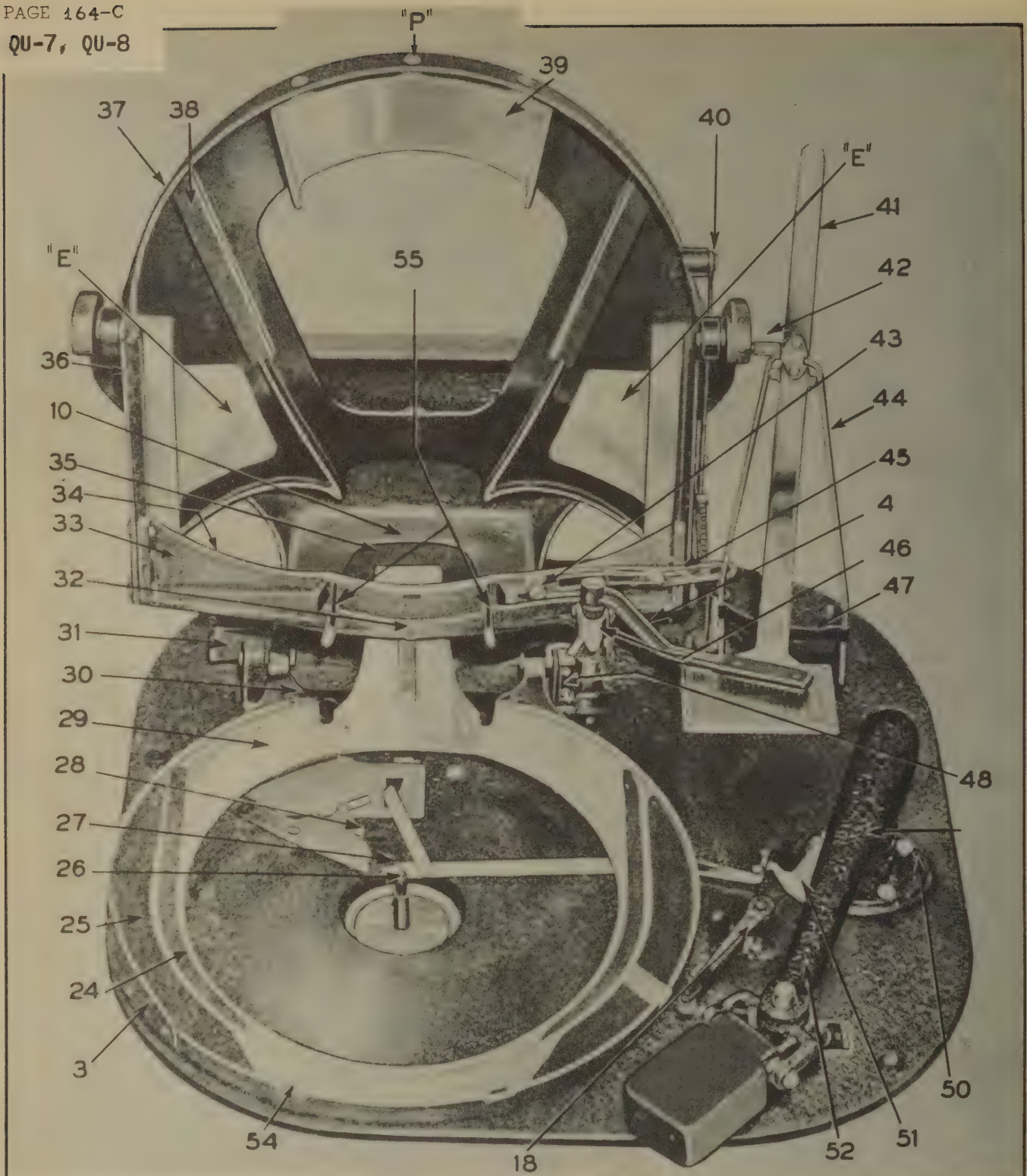



Fig. 2

| Reference No. | Stock No. | Description |
|---|---|---|
| 3 | 38084 | Record Tray Shield Felt Outer |
| 4 | 38117 | Record Reverse Arm and Fork Assembly (specify color) |
| 10 | 38138 | Record Bumper Guide and Felt Assem. |
| 18 | 38131 | Pickup Arm Stop Lever Assembly (specify color) |
| 24 | 38079 | Record Tray Felt—Small |
| 25 | 38078 | Record Tray Felt—Large |
| 26 | 38139 | Turntable Drive Shaft Cap |
| 27 | 38132 | Automatic Stop Trip Lever Assembly |
| 28 | 38023 | Pin—Record Control Rod |
| 29 | 38137 | Record Tray Assembly |
| 30 | 38089 | Record Tray Bumper—Rear |
| 31 | 38097 | Record Bumper |
| 32 | 38092 | Reverse Arm Bumper |
| 33 | 38135 | Lower Record Support Assembly |
| 34 | 38081 | Lower Record Support Felt |
| 35 | 38082 | Record Bumper Guide Felt |
| 36 | 38083 | Magazine Side Felt |
| 37 | 38136 | Record Magazine Assembly |
| 38 | 38080 | Record Magazine Felt |
| 39 | 38106 | Record Support—Upper |
| 40 | 38008 | Shoulder-Screw-Magazine Link |
| 41 | 38126 | Record Reverse Guide Assembly |
| 42 | | Pin—Reverse Guide Stop |
| 43 | 38011 | Shoulder Screw—Separator |
| 44 | 38108 | Record Reverse Guide |
| 45 | 38127 | Record Separator and Hub Assembly |
| 46 | 38072 | Record Reversing Arm Lock |
| 47 | 38052 | Record Reverse Guide Spring |
| 48 | 38074 | Record Reverse Arm Lock Stop |
| 50 | | Pickup Arm Base |
| 51 | 38071 | Automatic Stop Trip Lever, Short |
| 52 | 38110 | Pickup Arm Casting only |
| 54 | 38088 | Record Tray Bumper—Front |
| 55 | 38140 | Pin—Record Support |

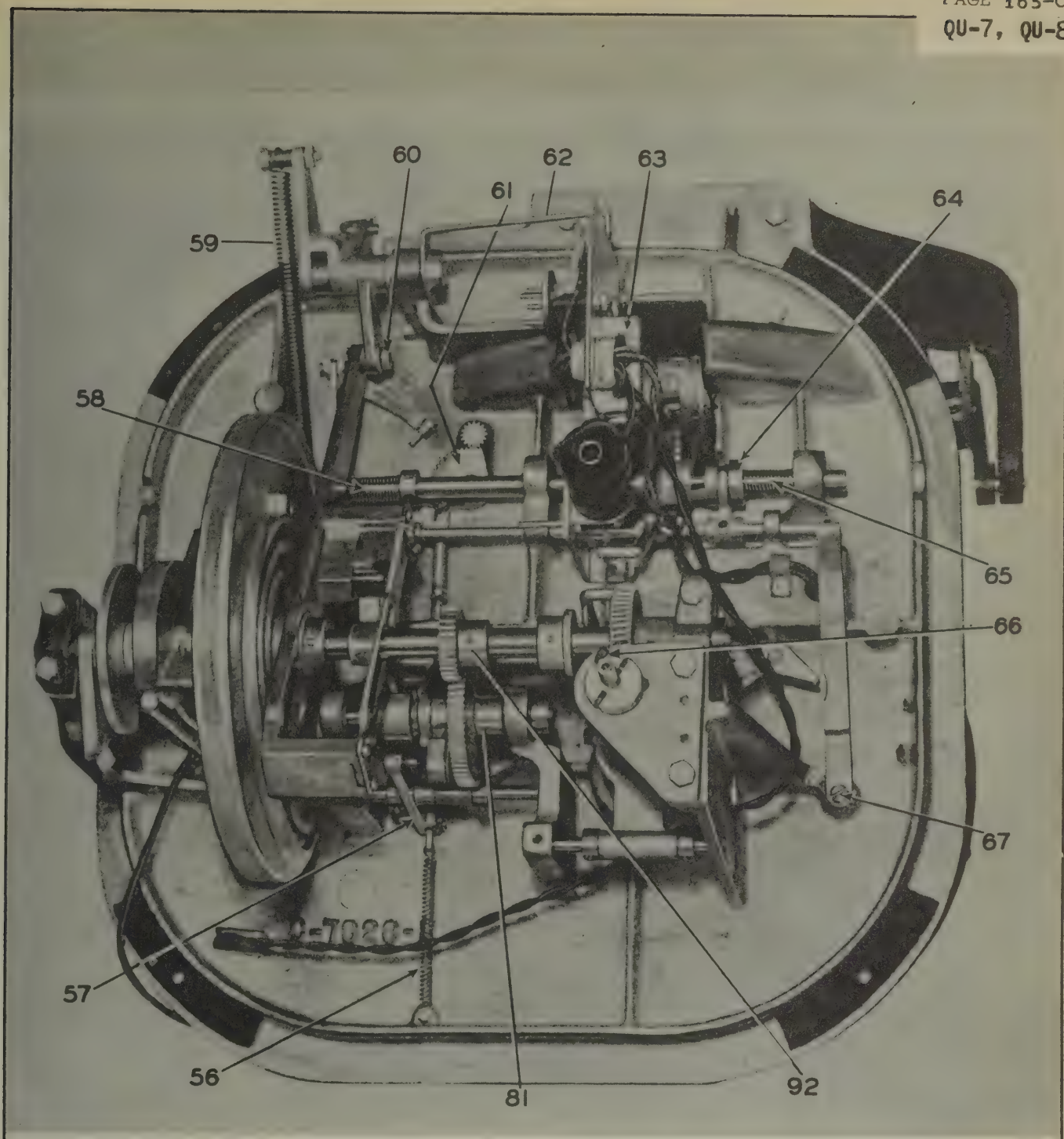



Fig. 3

| Reference No. | Stock No. | Description |
|---|---|---|
| 56 | 38050 | Spring—Reverse Arm |
| 57 | 38128 | Reverse Cam Arm and Roller Assembly |
| 58 | 38038 | Spring—Record Separator Hook Lever |
| 59 | 38039 | Spring—Magazine Slide Arm |
| 60 | 38007 | Shoulder Screw—Magazine Slide Arm |
| 61 | 38031 | Record Reverse Pinion Segment |
| 62 | | Solenoid Plate Bracket |
| 63 | 38000 | Condenser—1.0 Mfd. 400-Volt (in can) |
| 64 | 38037 | Record Repeat Sliding Clutch Cam |
| 65 | 38040 | Spring—Record Repeat Clutch |
| 66 | 38016 | Screw—Turntable Shaft Collar |
| 67 | 38012 | Shoulder Screw—Repeat Lever |
| 81 | 38121 | Record Reverse Cam Shaft Assembly |
| 92 | | Gear—Reverse Cam Shaft Driver |

## 12. REVERSE ASSEMBLY LINK ROD.

Loosen lock nut "H," Fig. 6, while the record changer is in the reversing position, that is, when the reversing assembly (41) (Fig. 2) is in front of the magazine. Remove the screw (79) (Fig. 4) holding the reverse segment link (80) (Fig. 4) to the reverse segment (61) (Fig. 4) and lengthen or shorten the link, by the link thread until the reversing crank (9) (Fig. 1) stands with the crank pin just barely touching, but not binding, against the front side of the fork (4) (Fig. 2). After the adjustment has been made, lock the link in place with the lock nut "H," Fig. 6.

## 13. TO ADJUST REVERSE CAM ARM AND ROLLER ASSEMBLY (57) (Fig. 3).

See Section 7 under Instructions For Replacing a Reverse Cam.

## 14. LATERAL LOCATION OF THE MAIN CAM SHAFT.

Both end bearings of the main cam shaft are movable, and are used to locate the cam shaft in its proper lateral position, as well as adjust the amount of end play. The main cam shaft is located laterally so that the ball in the end of the tone arm lift rod (87) (Fig. 5) travels in the exact center of the tone arm lift cam (86) (Fig. 5). As shown at "M" in Fig. 5.

## 15. TO ADJUST THE CLUTCH THROWOUT LEVER AND CAM.

The clutch throwout lever cam is shown as No. 125 in Fig. 7 and is adjusted by loosening the shoulder screw (69) (Fig. 4) to a sliding tension after the record changer has been stopped in the playing position. The clutch throwout lever cam should just clear the point of the turntable throwout cam (93) (Fig. 5) with the clutch disengaged. Unless clearance between the turntable throwout cam and the clutch lever throwout cam is maintained the record changer will jam. If too much clearance is allowed the turntable throwout cam will not disengage the clutch and the record changer will continue to change records without playing them.

## 16. TO ADJUST THE PICKUP ELEVATION.

When the tone arm swings in towards the record, the pickup arm lever hook (22) (Fig. 1) comes to rest against the pickup arm stop lever (18) (Fig. 1) and when the tone arm lowers the pickup toward the record it pauses momentarily before the pickup arm lever hook goes through the stop lever. If the record changer is stopped during this pause, it will be found that the ball in the end of the pickup arm lift shaft (87) (Fig. 5) is at the point marked "L" in Fig. 5 on the lift cam (86) (Fig. 5). Now if the pickup, with a needle in the proper position, is moved beyond the edge of the record, the point of the needle will extend below the top surface of the record a distance equal to half the thickness of the record. The correct elevation of the pickup is made by the screw in the underside of the tone arm fork against which the pickup cover rests. Loosen the locknut, adjust the screw to bring the needle to the position mentioned above, then lock the locknut.

## 17. PICKUP FEED IN ADJUSTMENT.

The collar of the pickup arm swing lever and collar assembly (84) (Fig. 5) should ride on the leather facing of the friction cam (96) (Fig. 5) until the pickup arm lever hook (22) (Fig. 1) has engaged the stop lever (18) (Fig. 1). Then a slight amount of friction should be maintained after the ball at the end of the pickup lift arm (87) (Fig. 5) has engaged with the lift cam (86) (Fig. 5). This friction should be maintained until the needle has touched the record, otherwise the pickup arm may move away from the stop lever and the needle miss the record. If the friction be maintained too long the needle may be forced beyond the first playing groove. To adjust this, the pin locking the friction cam to the main cam shaft should be driven out and the Allen set screw loosened to a sliding tension. The cam is rotated forward, in the direction of rotation of the main cam shaft, to maintain the friction a longer time and backward to maintain it for a shorter time.

## 18. TO ADJUST THE REVERSE CAM SHIFT LEVER (105) (Fig. 7).

This lever is moved by the record control shaft (116) (Fig. 7) and is held in position by an Allen set screw. It should be positioned on its shaft so that the record reverse cam (85) (Fig. 5) is firmly engaged with its pin (74) (Fig. 4) in the "Both Sides" position. In the "One Side" and "Repeat" positions it should have good clearance with the pin. If any adjustment of this lever is made be sure to check the setting of the Reverse Cam Arm and Roller Assembly (57) (Fig. 4) as instructed in Section 7 of the instructions on replacing a reverse cam.

## 19. TO ADJUST THE SOLENOID MOTOR SWITCH (108) (Fig. 6).

After the switch cover has been removed the switch is exposed. The upper switch points should make good electrical contact, while the main clutch is disengaged, in this position the clearance between the bottom points should be approximately 3/32". While the clutch moves from the disengaged to the engaged position the upper switch points should remain closed until the lower set of points are closed. When the clutch is fully engaged the lower points should make good contact and the clearance between the upper points should be approximately 3/32".

To adjust the switch loosen the screw through the bakelite switch base at the rear of the switch assembly. After the position is found where proper clearance is secured, with the clutch engaged and disengaged, the switch should be locked in position with the screw.

In some machines a headless set screw is used to lock the switch in position. This screw is near the point of the tapered bakelite insulating block. Loosen this screw and adjust switch to get proper clearance then lock the switch in position by the set screw.

The two upper contacts are in series with the auto trip switch and the two lower contacts are shunted across the motor switch. When the clutch is engaged the auto trip switch is out of circuit and the motor switch is shunted by the lower contacts thus insuring the completion of the change cycle even though the instrument is switched to radio or turned off.

## 20. CLUTCH CLEARANCE.

The clearance between the driven (70) (Fig. 5) and driving (99) (Fig. 5) members of the clutch should be approximately .020" (Twenty thousandths), and is adjusted by

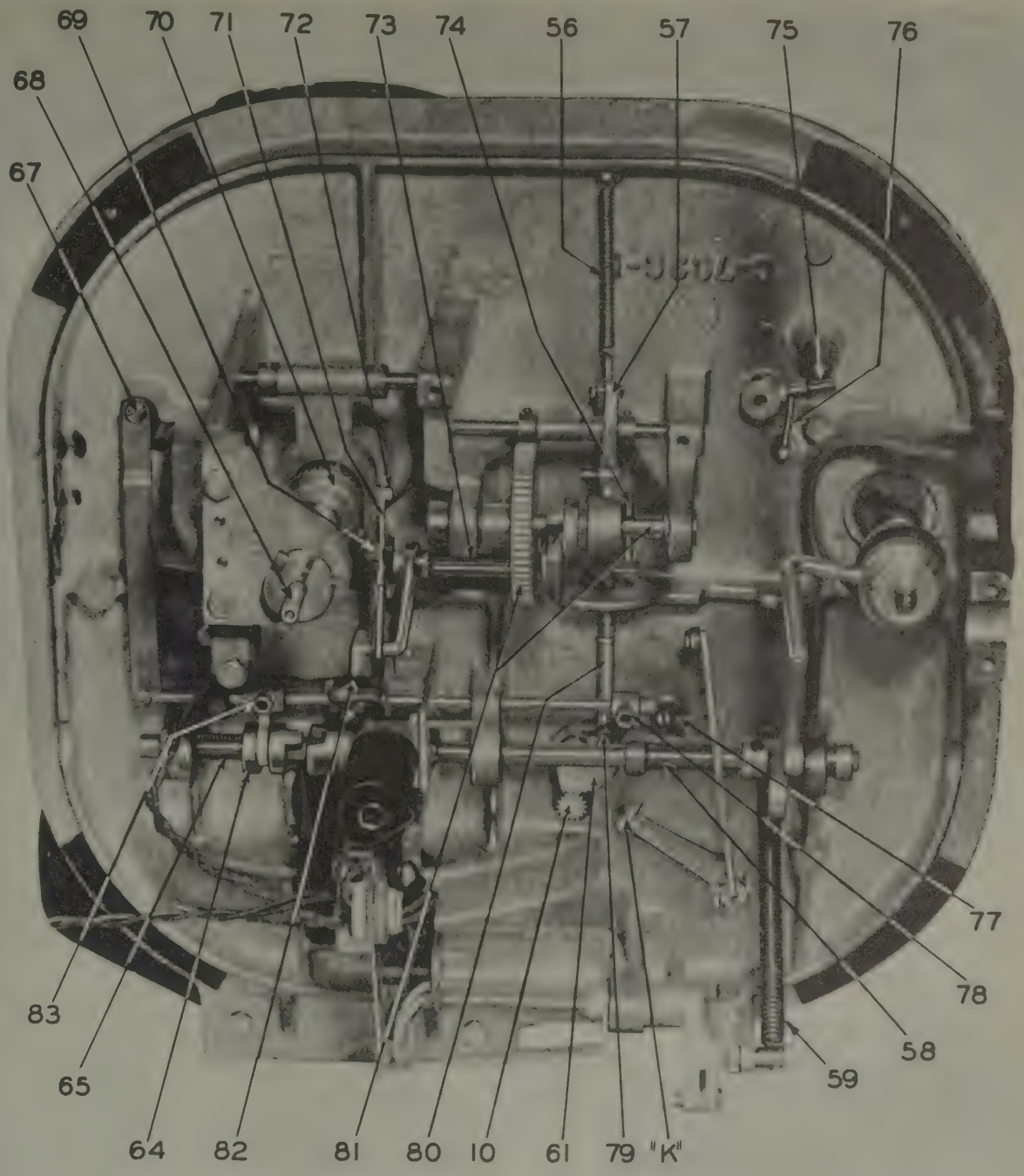



Fig. 4

| Reference No. | Stock No. | Description |
|---|---|---|
| 9 | 38119 | Reverse Pinion and Crank Assembly |
| 56 | 38050 | Spring—Reverse Arm |
| 57 | 38128 | Reverse Cam Arm and Roller Assembly |
| 58 | 38038 | Spring—Record Separator Hook Lever |
| 59 | 38039 | Spring—Magazine Slide Arm |
| 61 | 38031 | Record Reverse Pinion Segment |
| 64 | 38037 | Record Repeat Sliding Clutch Cam |
| 65 | 38040 | Spring—Record Repeat Clutch |
| 67 | 38012 | Shoulder Screw—Repeat Lever |
| 68 | | Turntable Drive Shaft Assembly |
| 69 | 38015 | Screw—Clutch Throwout Cam |
| 70 | 38124 | Worm and Bushing Assembly |
| 71 | 38130 | Clutch Throwout Lever and Spring Assembly |
| 72 | 38013 | Shoulder Screw—Clutch Throwout Lever |
| 73 | 38043 | Spring—Record Reverse Cam Control |
| 74 | 38022 | Pin—Reverse Cam Shaft |
| 75 | 38095 | Stop Lever Collar Pin Tubing |
| 76 | 38046 | Spring—Tone Arm Lever |
| 77 | 38036 | Reverse Segment Stop Cam |
| 78 | 38101 | Record Repeat Throwout Hook Lever |
| 79 | 38010 | Shoulder Screw—Reverse Segment Link |
| 80 | 38021 | Pin—Short—Reverse Segment |
| 81 | 38121 | Record Reverse Cam Shaft Assembly |
| 82 | 38104 | Record Repeat Lock Lever |
| 83 | 38102 | Record Repeat Clutch Fork Lever |

loosening screw "N" Fig. 7 to a sliding tension and adjusting the clutch fork (121) (Fig. 7) and the solenoid to clutch lever and pin assembly until the proper clearance is obtained. After adjustment is made lock the screw "N," Fig. 6.

## 21. TO ADJUST SOLENOID WEDGE SPRING.

This phosphor bronze spring is located on one of the three spacers used to mount the solenoid plate bracket to the solenoid bracket. It is used to prevent clutch chatter or bounce when the clutch engages. The only adjustment is to bend the spring to a snug fit with a long screw driver so as to increase or decrease its pressure on the solenoid to clutch lever (118) (Fig. 7).

## 22. TO ADJUST THE RECORD REPEAT LOCK LEVER (82) (Fig. 7).

The purpose of this lever is to prevent accidental shifting of the Selector Arm while the instrument is not in the playing position. In the "Repeat" position this lever is on the side of the Solenoid to Clutch Lever (118) (Fig. 7) away from the main cam. In the "One Side" and "Both Sides" positions it is on the main cam side of the solenoid to clutch lever. With the tone arm in the playing position (Main Clutch Disengaged) this lock lever should clear the solenoid to clutch lever by approximately 3/16" when moved under it.

## 23. TO ADJUST THE REVERSE CAM LOCK LEVER (115) (Fig. 7).

This lever should be on the main cam side of the solenoid to clutch lever when in the "Both Sides" position. And on the opposite side when in the "One Side" and "Repeat" positions. With the main clutch disengaged the lock lever should clear the solenoid to clutch lever by approximately 1/16" when moving under it.

## 24. TO ADJUST RECORD REPEAT THROW-OUT LEVER (119) (Fig. 7).

No adjustment of this part is necessary.

## 25. TO ADJUST RECORD REPEAT CLUTCH LEVER (83) (Fig. 7).

The adjustment of this lever is made by loosening the Allen set screw to a sliding tension then moving the part along the shaft. The sliding clutch should engage in the "One Side" and "Both Sides" positions, but should be disengaged in the "Repeat" position. The fork of this lever should not bind the sliding clutch in either the "Repeat" or "Both Sides" position.

## 26. TO ADJUST THE STOP TRIP SWITCH (137) (Fig. 8).

This switch is accessible by removing the turntable, which will expose the switch cover. To remove the switch cover it is necessary to remove the trip arm, which goes through the switch cover and the two flat head screws which hold the cover in place. The clearance between the contact points on the fixed and movable arms of the switch should be 1/32". After replacing the trip arm (27) (Fig. 8) in the switch, after the switch cover has been removed, set the turntable on the spindle, push stop trip arm (142) (Fig. 8) slowly about 1/4" toward the magazine and then turn the turntable through one complete revolution. This will insure the fibre cam, on the turntable, resetting the trip switch, the clearance between the trip arm and the moveable arm of the switch should be 1/32". The distance between the trip arm and the switch trip guard finger should also be 1/32".

To adjust the clearance between the trip arm hook (27) (Fig. 8) and the moveable switch arm, loosen the screw in the bakelite switch base, at the end nearest the tone arm. Move the switch until 1/32" clearance is secured between the trip arm hook and the moveable arm of the switch, then tighten the screw holding the switch. In making this adjustment be sure that the stationary arm of the switch is not bent when tightening this screw.

On some models a headless set screw, near the end of the coil spring, is used to lock the switch in position: loosen this screw, adjust the switch, then tighten the set screw.

## 27. TO ADJUST THE FRICTION JOINT OF AUTOMATIC TRIP SWITCH.

The amount of friction necessary in the friction joint between the auto stop trip lever—long (27) (Fig. 8) and the auto stop trip lever—short (142) (Fig. 8) should be just sufficient to close the automatic stop trip switch (137) (Fig. 8). The friction is regulated by adjusting the screw which tightens the flat spring (141) (Fig. 8). If the tension is too great the instrument may trip before finishing a record, if not enough tension is had the instrument will not change records when the needle hits the automatic change groove.

## 28. INSTRUCTIONS FOR REPLACING THE RECORD REVERSE CAM AND ITS ADJUSTMENTS.

1. Set record changer in the playing position. Carefully mark the drive gear (92) (Fig. 3) on the main shaft and the driven gear as shown 81, Fig. 3, by prick punch marks or scriber, so that the same teeth can be engaged after reassembly, thus insuring proper timing.

2. Remove the two bolts, one (60) (Fig. 3) securing the magazine slide and roller assembly to the magazine slide arm lever, and one (15) (Fig. 1) securing the record slide arm and stud assembly to the record tray drive crank.

3. Looking in from the rear of the instrument, remove the Durex bushing from the end of the main cam shaft, nearest the motor drive shaft. This is accomplished by loosening the bolt to the right of the main shaft. Care should be taken when replacing this bushing so as not to tighten the bolt enough to crush the bushing; a snug fit only is required.

4. Remove lower half of bearing and Durex bushing from the other end of the main cam shaft and work the cam shaft out of the record changer. The same precaution against crushing this bushing should be taken with this one as with the one in the preceding section.

5. Remove taper pin from gear and loosen set screw in the collar, both shown as 81 in Fig. 4, of the reverse cam shaft assembly, as well as the pin (74) (Fig. 5) over which the reverse cam forks, when in the reversing position. After removing the collar and sliding the gear to one side, file all burs from the edges of the holes in the reverse cam shaft. Slide the shaft through its Durex bushing toward the rear of the instrument far enough to allow the removal and replacement of the reverse cam (85) (Fig. 5).

6. Reassemble the reverse cam shaft assembly, making certain that the taper pin holes in the shaft and gear are correctly aligned to permit the taper pins being properly inserted. The set screw in the collar at the end of the shaft should be properly tightened.

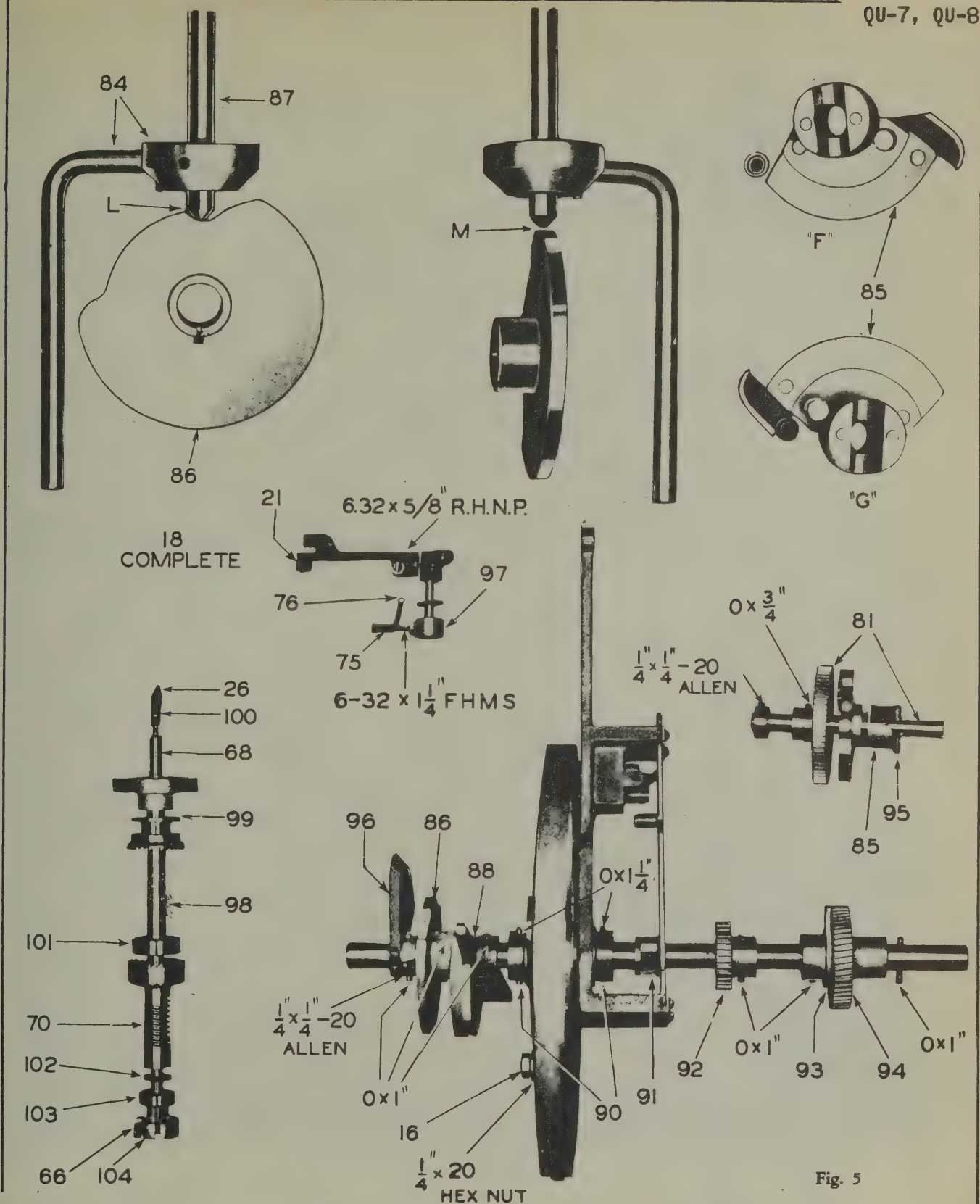



Fig. 5

| Reference No. | Stock No. | Description |
|---|---|---|
| 16 | 38024 | Pin—Record Tray Slide |
| 18 | 38131 | Pickup Arm Stop Lever |
| 21 | 38094 | Stop Lever Roller Tubing |
| 26 | 38139 | Turntable Driveshaft Cap |
| 66 | 38016 | Screw—Turntable Shaft Collar |
| 68 | | Turntable Shaft Assembly |
| 70 | 38124 | Worm and Bushing Assembly |
| 74 | 38022 | Pin—Reverse Cam Shaft |
| 75 | 38095 | Stop Lever Collar Pin Tubing |
| 76 | 38046 | Spring—Tone Arm Stop Lever |
| 81 | 38121 | Record Reverse Cam Shaft Assembly |
| 84 | | Pickup Swing Lever and Collar Assembly |
| 85 | 38123 | Record Reverse Cam and Pin |
| 86 | | Pickup Lift Cam and Hub Assembly |
| 87 | | Pickup Arm Lift Shaft |
| 88 | | Pickup Arm Swing Cam |
| 90 | | Main Cam Collar |
| 91 | | Magazine Slide Arm Cam |
| 92 | | Gear—Reverse Cam Shaft Driver |
| 93 | | Turntable Throwout Cam and Hub Assembly |
| 94 | 38030 | Gear—Main Drive |
| 96 | | Pickup Arm Friction Cam Assembly |
| 97 | | Pickup Arm Stop Lever Collar |
| 98 | 38162 | No. 2 Woodruff Key |
| 99 | 38034 | Turntable Shaft Clutch |
| 100 | | Turntable Driveshaft Cap Tubing |
| 101 | 38033 | Ball Bearing—Upper |
| 102 | 38060 | Thrust Washer—Worm Shaft |
| 103 | 38032 | Ball Bearing—Lower |
| 104 | 38064 | Turntable Shaft Collar |

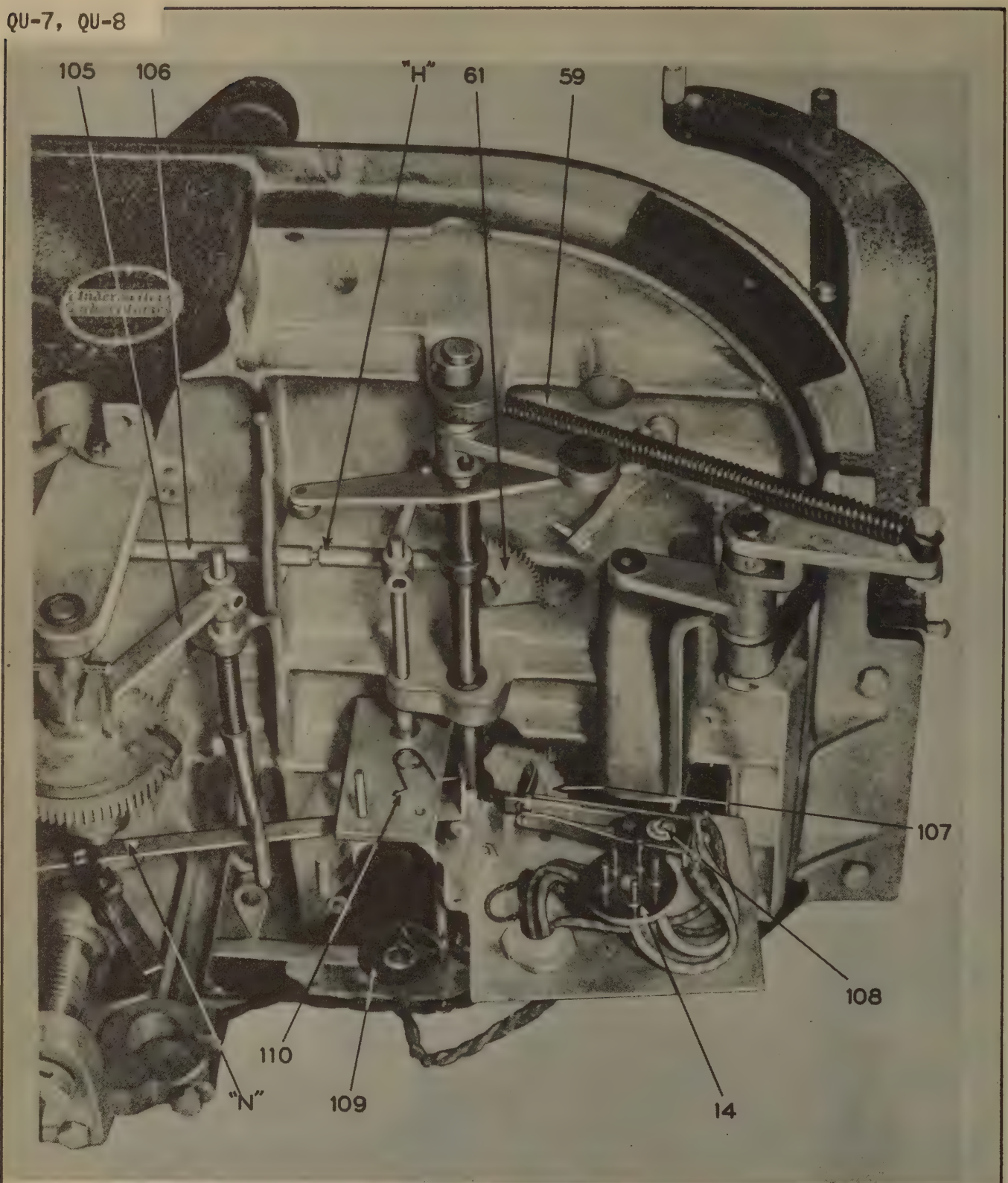



Fig. 6

| Reference No. | Stock No. | Description |
|---|---|---|
| 14 | 38113 | Chassis Plug 5 Prong Male |
| 59 | 38039 | Spring—Magazine Slide Arm |
| 61 | 38031 | Record Reverse Pinion Segment |
| 105 | 38100 | Record Reverse Cam Shaft Lever |
| 106 | 38020 | Pin—Long, Reverse Segment |
| 107 | 38111 | Record Tray Gear—Driver |
| 108 | 38003 | Switch Assembly—Solenoid and Motor |
| 109 | 38141 | Solenoid Coil only |
| 110 | 38047 | Spring—Solenoid Lever Torsion |

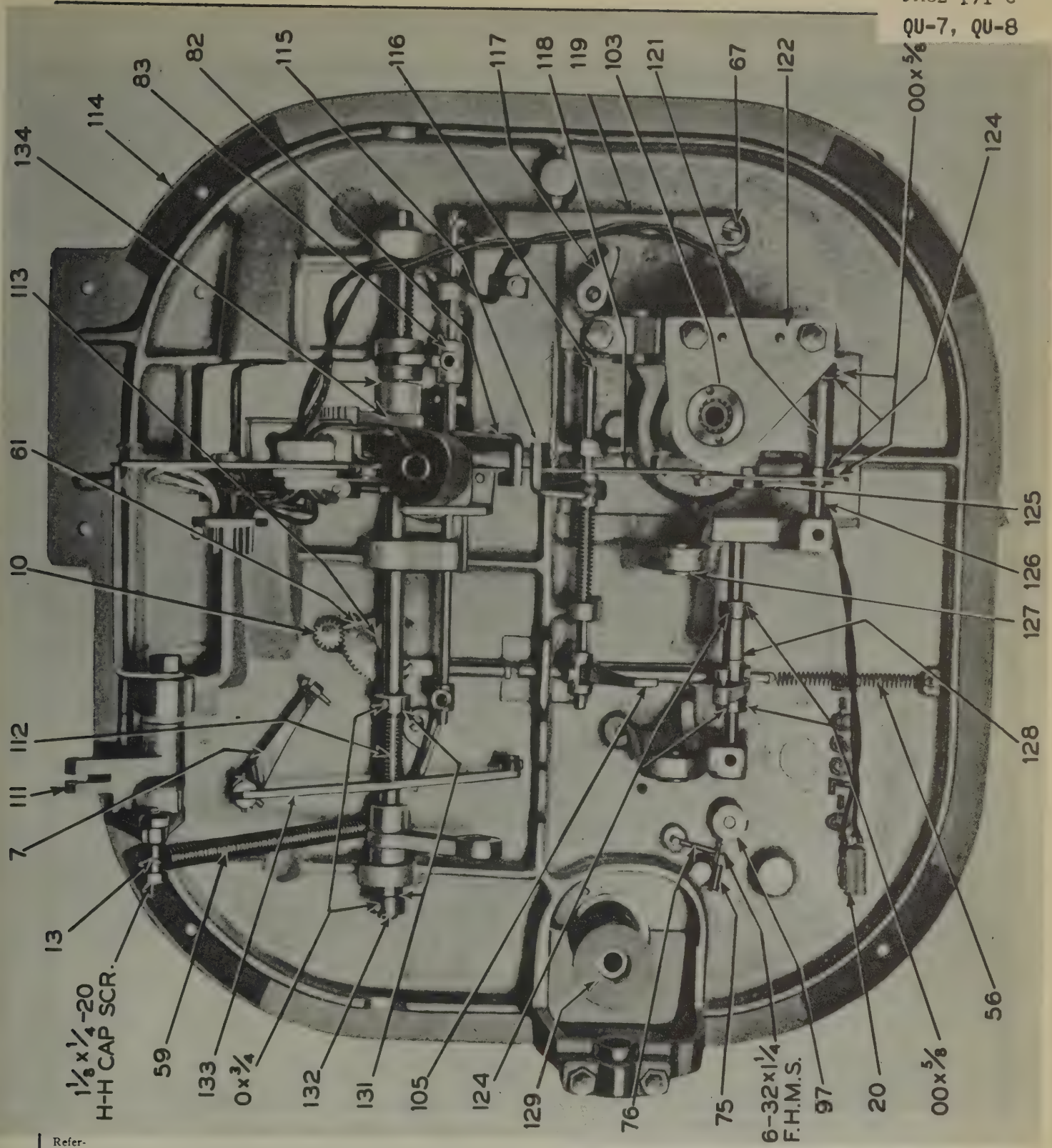



Fig. 7

| Reference No. | Stock No. | Description |
|---|---|---|
| 7 | 38116 | Separator Hook and Arm Assembly |
| 9 | 38119 | Reverse Pinion and Crank Assembly |
| 13 | 38057 | Record Magazine Bushing |
| 20 | 38001 | AC Line Toggle Switch |
| 56 | 38050 | Reverse Arm Spring |
| 59 | 38039 | Magazine Slide Arm Spring |
| 61 | 38031 | Record Reverse Pinion Segment |
| 67 | 38012 | Repeat Lever Shoulder Screw |
| 75 | 38095 | Stop Lever Collar Pin Tubing |
| 76 | 38046 | Tone Arm Stop Lever Spring |
| 82 | 38104 | Record Repeat Lock Lever |
| 83 | 38102 | Record Repeat Clutch Fork Lever |
| 97 | | Pickup Arm Stop Lever Collar |
| 103 | 38032 | Ball Bearing |
| 105 | 38100 | Record Reverse Cam Shaft Lever |
| 111 | | Magazine Slide Arm Lever |
| 112 | 38045 | Separator Hook Spring |
| 113 | 38009 | Reverse Segment Shoulder Screw |
| 114 | 38098 | Main Frame Pad |
| | 38153 | 00x3/8 Taper Pin |
| | 38154 | 0x3/4 Taper Pin |
| 115 | 38105 | Reverse Cam Lock Lever |
| 116 | | Record Control Shaft |
| 117 | 38120 | Record Control Lever and Stud Assembly |
| 118 | 38129 | Solenoid to Clutch Lever and Pin Assembly |
| 119 | 38073 | Record Repeat Throwout Lever |
| 121 | 38103 | Main Clutch Fork Lever |
| 122 | 38066 | Bearing Retainer Plug |
| 124 | 38063 | 5/16" Shaft Collar |
| 125 | 38107 | Clutch Throwout Cam |
| 126 | 38115 | Solenoid Lever Shaft Assem. |
| 127 | 38059 | Record Tray Shaft Bushing |
| 128 | 38114 | Record Reverse Arm Shaft Assem. |
| 129 | 38090 | Pickup Arm Brake Facing |
| 131 | 38062 | 7/16" Shaft Collar |
| 132 | | Record Tray Drive Shaft Assembly |
| 133 | 38144 | Separator Hook Lever and Roller Assembly |
| 134 | 38122 | Record Tray Gear and Sliding Cam Clutch |

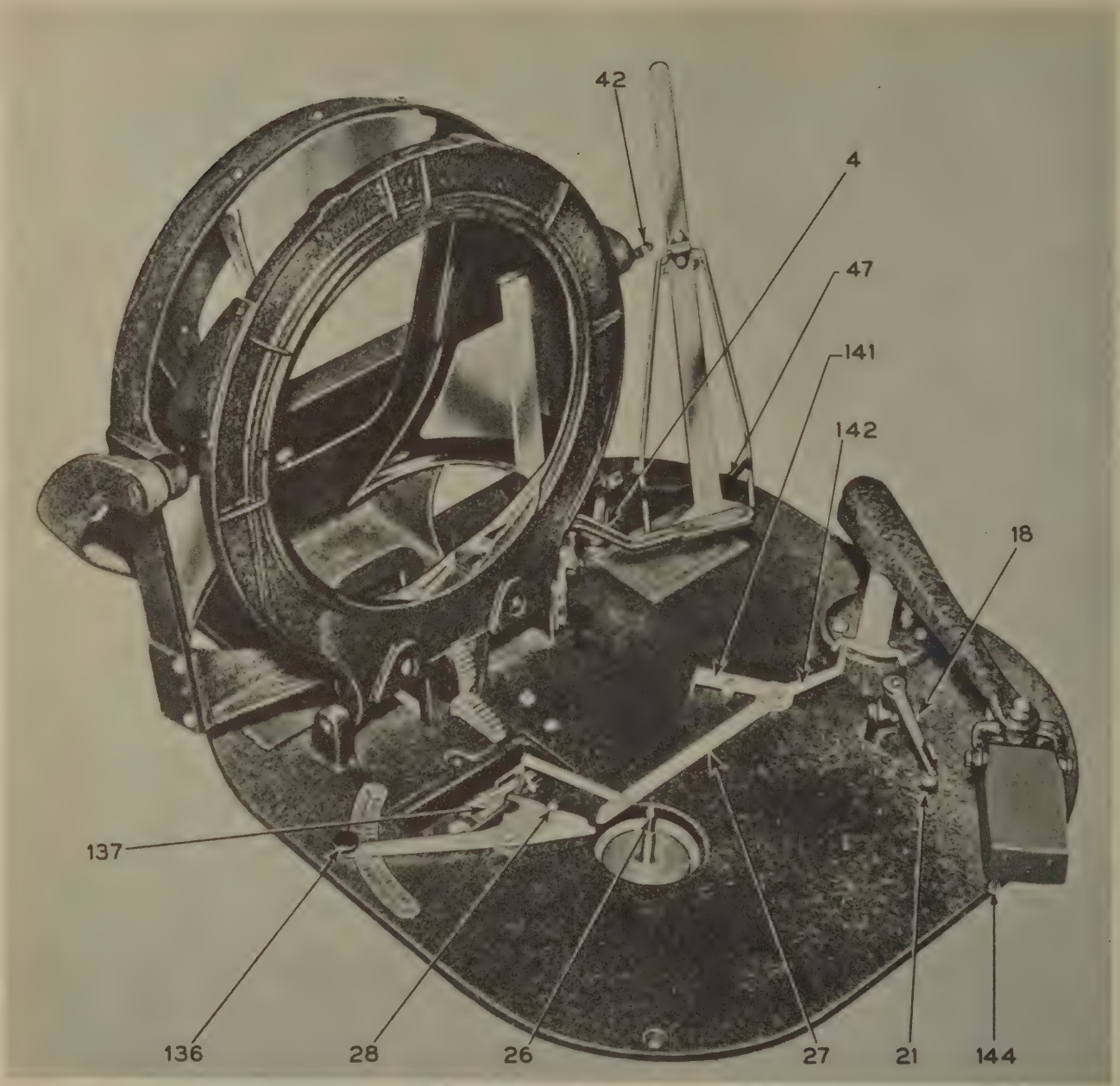



Fig. 8

| Reference No. | Stock No. | Description |
|---|---|---|
| 4 | 38117 | Record Reverse Arm and Fork Assembly (specify color) |
| 18 | 38131 | Pickup Arm Stop Lever Assembly (specify color) |
| 21 | 38094 | Stop Lever Roller Tubing |
| 26 | 38139 | Turntable Drive Shaft Cap |
| 27 | 38132 | Automatic Stop Trip Lever Assembly |
| 28 | 38023 | Pin—Record Control Rod |
| 42 | | Pin—Reverse Guide Stop |
| 47 | 38052 | Record Reverse Guide Spring |
| 136 | | Selector Knob |
| 137 | 38004 | Record Trip Switch Assembly—complete |
| 141 | 38048 | Spring—Automatic Trip Lever Pin |
| 142 | 38071 | Automatic Stop Trip Lever—Short |
| 144 | 37292 | Pickup Brush Assembly |

| STOCK No. | DESCRIPTION |
|---|---|
| | MAGNETIC PICKUP ASSEMBLIES |
| 14291 | Armature—Pickup armature and spring |
| 37292 | Brush—Pickup brush and mounting bracket |
| 14672 | Coil—Pickup coil and support assembly |
| 14292 | Damper—Pickup armature damper block |
| 37293 | Housing—Finished pickup housing only—less mechanism and cover |
| 37291 | Mechanism—Magnetic pickup unit only—less housing and brush |
| 3811 | Screw—Pickup needle screw |
| 37294 | Terminal—Pickup connector block with set screws and mtg. screw |
| 37286 | Pivot—Pickup unit pivot screw and locknut |
| 37287 | Bearing—Pickup unit pivot bearing |

7. Remove the reverse cam arm and roller assembly (57) (Fig. 4) and make sure that the roller pin and arm are not bent, if either of these items are found bent we suggest that you replace the reverse arm and roller assembly.

8. In reassembling the reverse cam arm and roller assembly (57) (Fig. 4) in its proper position for alignment with the reverse cam, be sure the roller is about 1/32" inside the ridge on the reverse cam, when the cam is in the reversing position.

9. Remove the taper pin from the gear (92) (Fig. 5) on the main shaft, which drives the gear on the reverse cam shaft assembly (81) Fig. 5) and remount the main shaft to the record changer chassis, pushing the above gear, from which the pin was removed, to one side so that it will not mesh with its driven gear.

10. Locate the main shaft so that the lower end of the pickup arm lift shaft travels in the center of the pickup arm lift cam, as shown at "M" in Fig. 5. With the main shaft in this position, adjust the main shaft Durex bushings so that there is no end play in the main cam shaft assembly.

11. Rotate the main cam shaft to the playing position so that the pickup arm is lowered over the turntable.

12. Set the reverse cam in its lowest position, with the control lever in the "Both Sides" position, so that the fork of the reverse cam is meshed with the driving pin.

13. Mesh the reverse cam assembly driver gear (92) (Fig. 5) with the reverse cam assembly driven gear so that the identifying punch marks correspond to the original position. The taper pin for the driver gear should be inserted next. If the assembly has been properly made there should be approximately 1/32" clearance between the roller or the reverse cam arm and the reverse cam. See "F," Fig. 5.

14. Throw the control lever to the "One Side" position and rotate the reverse cam with the fingers until it is in the reversing position. Again throw the control lever to the "Both Sides" position. Now there should be approximately 1/32" clearance between the reverse cam and the roller. See "G," Fig. 5. If the clearance is not approximately 1/32" for both positions of the reverse cam it indicates either the gears are not properly meshed or the reverse segment link rod may be bent. A careful check of the latter while the main shaft is out will save time and trouble later.

## 29. INSTRUCTIONS FOR REMOVING THE AUTOMATIC MECHANISM FROM THE CABINET.

In most cases, any repairs and adjustments on this mechanism can be made with the mechanism in the cabinet. If it is necessary to remove the mechanism for any reason, it is recommended that the following procedure be observed, and that two persons take part in the removal. Make sure the mechanism is not in cycle.

1. There is a great possibility, when removing the chassis from the cabinet, to mar or scratch the cabinet. If you will place a piece of cardboard around the record changer it will eliminate, to a great extent, the possibility of marring the finish. A rubber auto mat, with a hole for the record changer, the same size as the one in the cabinet makes an excellent pad. This pad can be split and is easily put in position and removed. Pad the sides of the cabinet with pieces of cardboard.

2. Remove the backs from the record changer, and amplifier compartments.

3. Remove the five prong socket cable from the solenoid assembly, remove the pickup lead from the terminal board, and free the shielded lead going to the shorting switch.

4. Remove the four bolts that hold mechanism to the shelf.

5. Loosen the two Allen set screws in the flexible coupling and allow it to slide down the drive shaft, so as to clear the record changer shaft.

6. Remove the screw marked "P" in Fig. 2. This is the middle of the screws of the upper record support.

7. Remove the magazine link shoulder screw No. 40 Fig. 2. This will allow the magazine to be swung parallel to the turntable, and take up less room.

8. Remove the pickup arm assembly by removing the three screws in the pickup arm base, swinging the pickup arm to the back of the mechanism and working the bottom of the pickup assembly out of the hole.

9. Carefully mark the drive gear (92) (Fig. 3) on the main shaft and the driven gear shown as part of 81, Fig. 3, by prick punch marks or scriber, so that the same teeth can be engaged after reassembly, thus insuring proper timing.

10. Remove the two bolts, one (60) (Fig. 3) securing the magazine slide and roller assembly to the magazine slide arm lever, and one (15) (Fig. 1) securing the record slide arm and stud assembly to the record tray drive crank.

11. Looking in from the rear of the instrument, remove the Durex bushing from the end of the main cam shaft, nearest the motor drive shaft. This is accomplished by loosening the bolt to the right of the main shaft. Care should be taken when replacing this bushing so as not to tighten the bolt enough to crush the bushing; a snug fit only is required.

12. Remove lower half of bearing and Durex bushing from the other end of the main cam shaft and work the cam shaft out of the record changer. The same precaution against crushing the bushing should be taken as stated, in the preceding section.

13. From the rear of the cabinet, lift the mechanism straight up, and carry it straight back until the rear bearing bracket of the main shaft has cleared the shelf; then rotate the mechanism 90°, turning it so that the record magazine comes toward the back of the cabinet until the record magazine is clear of the cabinet. Then drop the record magazine end of the mechanism slightly so that the drive shaft will clear the bottom shelf, and remove the mechanism.

**To Replace Mechanism:**—1. Replace mechanism by reversing procedure of step 13 above.

2. Replace the main cam shaft and its bushings, but do not tighten the bushings in place. Make sure that the gears marked in (9) above are meshing properly as marked. Make sure the throw-out cam 71 Fig. 4 is resting on top of the main shaft.

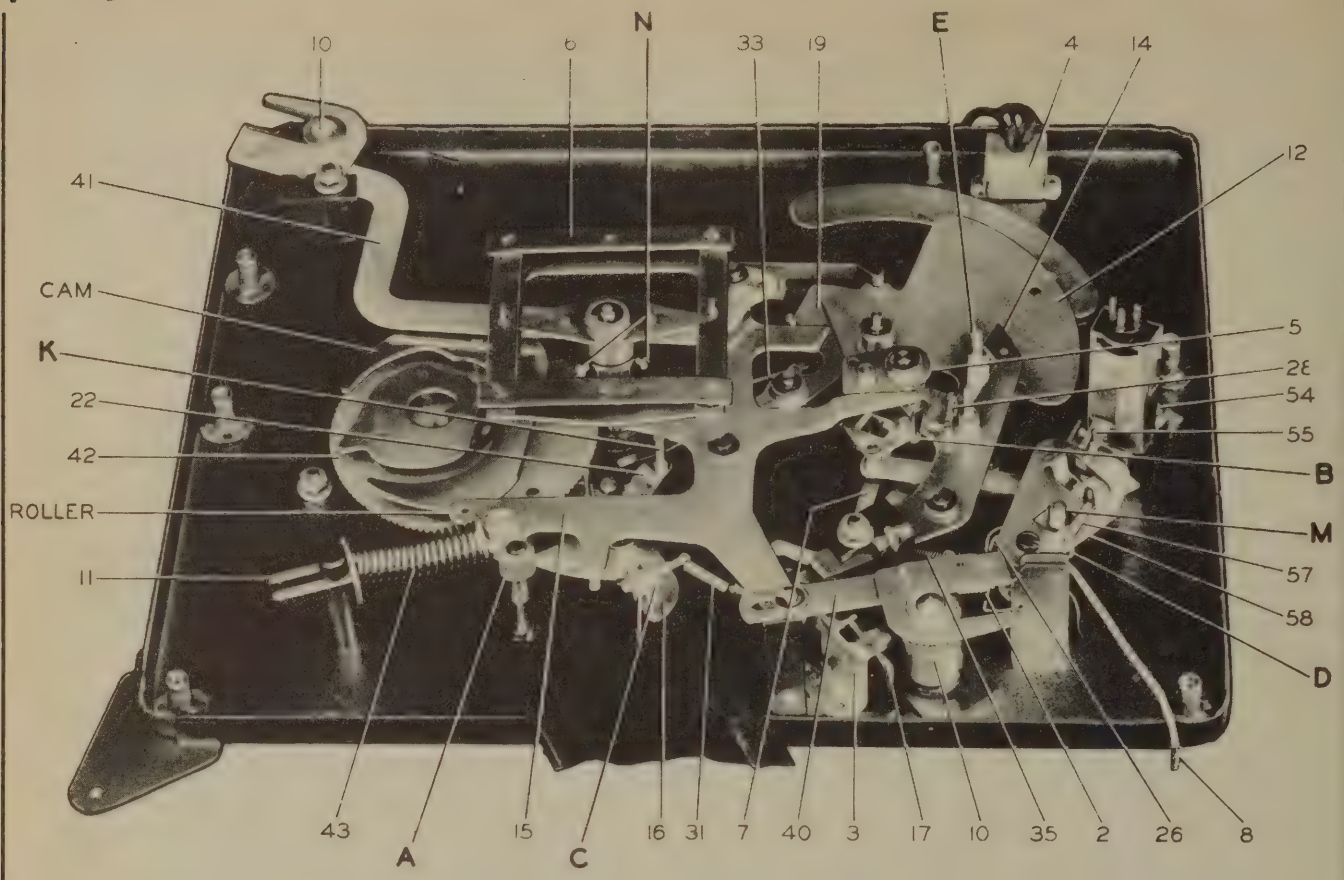
3. Replace the pickup arm assembly. Locate the main shaft so that the lower end of the pickup arm lift shaft travels in the center of the pickup arm lift cam, as shown at "M" in Fig. 5. With the main shaft in this position, adjust the main shaft Durex bushings so that there is no end play in the main cam shaft assembly.

4. Replace the two bolts removed in (4) (6) (7) and (10) above.

5. Adjust the position of the record tray as described under: "9. TO LOCATE AND ADJUST THE RECORD TRAY", by adjusting screw 15 (Fig. 1).

6. Turn the drive shaft or turntable with the fingers and put the mechanism thru a cycle to see that it is working correctly.

7. Replace the flexible coupling on drive shaft and replace connections to record changer.




## Names of Mechanism Parts

## MODEL QU7 VICTROLA MECHANISM

| | | |
|---|---|---|
| 2 | Guide | —Pickup-lift-cable guide. |
| 3 | Bracket | —Record-discriminating-lever bracket. |
| 4 | Switch | —Turntable motor switch. |
| 5 | Clutch | —Trip-lever friction clutch. |
| 6 | Coupling | —Flexible coupling. |
| 7 | Finger | —Trip-lever friction finger. |
| 8 | Cable | —Pickup shielded cable. |
| 9 | Spring | —Record-discriminating-lever spring (flat). |
| 10 | Gear | —Record-separator-shaft gear. |
| 11 | Guide | —Main-lever-spring guide. |
| 12 | Lever | —Index lever. |
| 14 | Lever | —Locating lever and pawl. |
| 15 | Lever | —Main lever. |
| 16 | Lever | —Pickup lift-cable lever. |
| 17 | Lever | —Record-discriminating lever and pawl. |
| 18 | Lever | —Record-separator elevating lever. |
| 19 | Lever | —Trip-detaining lever. |
| 22 | Pawl | —Trip pawl. |
| 23 | Pin | —Separator-shaft pin (engages gear). |
| 25 | Separator | —Record-separator knife. |
| 26 | Spring | —Pickup-arm starting spring. |
| 27 | Shelf | —Record-support shelf. |
| 28 | Spring | —Record-discriminating-lever pawl spring, or locating-lever pawl spring. |
| 31 | Spring | —Pickup lift-cable spring. |
| 33 | Spring | —Trip-detaining lever spring. |
| 34 | Shaft | —Record-separator shaft. |
| 35 | Spring | —Locating-lever spring. |
| 40 | Gear | —Short arm and rack gear. |
| 41 | Gear | —Long arm and rack gear. |
| 42 | Cam | —Cam and drive gear assembly. |
| 43 | Spring | —Main-lever spring. |
| 54 | Switch | —Automatic switch. |
| 55 | Pin | —Switch plunger pin. |
| 57 | Spring | —Trip lever cam spring. |
| 58 | Cam | —Trip-lever cam and link. |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | CHASSIS ASSEMBLIES (RC-551) |
| 37206 | Arm—Trip arm used on high frequency tone control |
| 35642 | Calibrator—Drive drum calibrator scale |
| 12714 | Capacitor—Air trimmer—medium 2-12 mmfd. |
| 36631 | Capacitor—Mica trimmer comprising 3 sections of 2-20 mmfd. each, 1 section of 5-50 mmfd. and 1 section of 3-30 mmfd. |
| 36630 | Capacitor—Mica trimmer comprising 5 sections of 3-30 mmfd. each |
| 35646 | Capacitor—6 mmfd. |
| 33381 | Capacitor—8.2 mmfd. |
| 36636 | Capacitor—Mica trimmer—1 section 8-80 mmfd. |
| 13200 | Capacitor—10 mmfd., moulded mica |
| 37621 | Capacitor—10 mmfd., silvered mica |
| 33380 | Capacitor—12 mmfd., ceramic |
| 37618 | Capacitor—12 mmfd., silvered mica |
| 13141 | Capacitor—47 mmfd., moulded mica |
| 33102 | Capacitor—47 mmfd., ceramic |
| 37329 | Capacitor—47 mmfd., silvered mica |
| 12723 | Capacitor—56 mmfd., moulded mica |
| 36843 | Capacitor—56 mmfd., ceramic |
| 37619 | Capacitor—56 mmfd., silvered mica |
| 12720 | Capacitor—100 mmfd. |
| 12724 | Capacitor—120 mmfd., moulded mica |
| 31813 | Capacitor—120 mmfd., mica |
| 37620 | Capacitor—200 mmfd. |
| 12694 | Capacitor—220 mmfd., moulded mica |
| 36616 | Capacitor—220 mmfd., mica |
| 30964 | Capacitor—330 mmfd., mica |
| 13894 | Capacitor—390 mmfd. |
| 33235 | Capacitor—580 mmfd. |
| 12536 | Capacitor—820 mmfd. |
| 37617 | Capacitor—1,000 mmfd. |
| 30057 | Capacitor—2,700 mmfd. |
| 30851 | Capacitor—.0035 mfd. |
| 30852 | Capacitor—.005 mfd., 500 volts |
| 5242 | Capacitor—.005 mfd., 1,000 volts |
| 30854 | Capacitor—.007 mfd. |
| 30855 | Capacitor—.01 mfd. |
| 30859 | Capacitor—.025 mfd. |

# Replacement Parts (Continued)



| STOCK No. | DESCRIPTION |
|---|---|
| 30857 | Capacitor—.035 mfd. |
| 30847 | Capacitor—.05 mfd. |
| 30858 | Capacitor—.07 mfd. |
| 30848 | Capacitor—0.1 mfd. |
| 12741 | Capacitor—0.5 mfd. |
| 32342 | Capacitor—Electrolytic, comprising 2 sections of 10 mfd., 450 volts |
| 35017 | Capacitor—Electrolytic, comprising 1 section of 30 mfd., 350 volts, and 1 section of 20 mfd., 150 volts |
| 37210 | Clip—Spring clip for volume control shaft |
| 34649 | Coil—Antenna coil—"A" band |
| 34647 | Coil—Antenna coil—"B" and 31 meter band |
| 32823 | Coil—Antenna coil—"X" band |
| 36629 | Coil—Antenna coil—"25-19-16-13" meter bands |
| 36632 | Coil—Oscillator coil—"A" and "B" bands |
| 31837 | Coil—Oscillator coil—"X" band |
| 36617 | Coil—Oscillator coil—"13 meter" band |
| 34657 | Coil—Oscillator coil—"16 meter" band |
| 36633 | Coil—Oscillator coil—"19 meter" band |
| 36634 | Coil—Oscillator coil—"25 meter" band |
| 36635 | Coil—Oscillator coil—"31 meter" band |
| 34652 | Coil—R.F. coil—"A" band |
| 34650 | Coil—R.F. coil—"B" and "31 meter" bands |
| 33765 | Coil—R.F. coil—"X" band |
| 34651 | Coil—R.F. coil—"25-19-16-13" meter bands |
| 34645 | Condenser—3-gang variable tuning condenser |
| 37832 | Connector—3-contact female socket as used on microphone and cutter cables |
| 12493 | Connector—5-contact female socket as used on band indicator cable |
| 11934 | Connector—6-contact female socket as used on function lamp cable |
| 37197 | Control—H.F. tone control |
| 37196 | Control—L.F. tone control (long shaft) |
| 37214 | Control—L.F. tone control (short shaft) |
| 37198 | Control—Microphone volume control complete with flexible and control shafts |
| 37195 | Control—Radio volume control |
| 32634 | Cord—Pointer drive cord—50-inch length with clips |
| 35788 | Core—Adjustable core and stud for "A" and "B" band oscillator coil |
| 31259 | Core—Adjustable core and stud for "13 meter" band, "16 meter" band, "19 meter" band, "25 meter" band, and "31 meter" band oscillator coils |
| 36093 | Core—Adjustable core and stud for "X" band oscillator coil |
| 35627 | Drum—Drive drum—less calibrator scale |
| 37213 | Gear—Gear and hub used on Stock No. 37214 tone control shaft |
| 37212 | Gear—Gear and hub used on Stock No. 37196 tone control shaft |
| 37211 | Hub—Microphone volume control shaft bracket and hub |
| 37882 | Jack—Double circuit phone jack |
| 37609 | Lever—Arm and lever for tone control switch |
| 37207 | Link—Link assembly actuated by Stock No. 37206 trip arm |
| 37192 | Plug—6-prong male plug for power supply cable |
| 14404 | Plug—7-prong male plug for power supply cable |
| 31048 | Plug—Single prong phono input cable plug |
| 35630 | Pulley—Drive cord pulley |
| 36842 | Resistor—5 ohms, 1 watt |
| 37622 | Resistor—6 ohms, 1 watt |
| 37204 | Resistor—Voltage divider comprising a 137-100-37-500 and 2,000 ohm section |
| 5201 | Resistor—220 ohms, ½ watt |
| 34766 | Resistor—1,000 ohms, ½ watt |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 30654 | Resistor—1,500 ohms, 1 watt |
| 34767 | Resistor—2,200 ohms, ½ watt |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 5114 | Resistor—15,000 ohms, 1 watt |
| 3219 | Resistor—18,000 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30787 | Resistor—47,000 ohms, ½ wat |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 3252 | Resistor—100,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30493 | Resistor—150,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 30784 | Resistor—330,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12413 | Resistor—680,000 ohms, ½ watt |
| 30562 | Resistor—680,000 ohms, ½ watt |
| 12013 | Resistor—1 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30208 | Resistor—1.2 meg., ½ watt |
| 31449 | Resistor—1.5 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13167 | Resistor—3.9 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 14350 | Screw—No. 8-32 square head set screw |
| 37209 | Shaft—Radio volume control extension shaft |
| 37194 | Shaft—Tuning shaft and flywheel |
| 4452 | Shield—Tube shield |
| 34799 | Socket—6-contact "Magic Eye" socket |
| 31251 | Socket—8-contact tube socket |
| 31365 | Socket—Band indicator lamp socket |
| 31364 | Socket—Pilot lamp socket |
| 13688 | Spring—Drive cord or pointer drive cord spring |
| 31261 | Spring—Retaining spring for oscillator coils, cores, and studs |
| 37205 | Support—Drive cord pulley support only—less pulleys and rubber grommet |
| 37201 | Switch—Function switch |
| 37344 | Switch—Phonograph fidelity switch |
| 37193 | Switch—Range switch |
| 37208 | Switch—Tone switch actuated by Stock No. 37207 link assembly |
| 37202 | Transformer—First I.F. transformer |
| 36614 | Transformer—Second I.F. transformer |
| 36615 | Transformer—Third I.F. transformer |
| 37203 | Transformer—AVC, I.F. transformer |
| 37343 | Transformer—Driver audio transformer |
| 30251 | Transformer—Microphone transformer |
| 2917 | Washer—"C" washer for tuning shaft, microphone volume control shaft, or radio volume control shaft |
| 33726 | Washer—"C" washer to hold pulley |

## POWER AND AMPLIFIER UNIT QU7

| STOCK No. | DESCRIPTION |
|---|---|
| 30859 | Capacitor—.025 mfd. |
| 37250 | Capacitor—20 mfd. |
| 37248 | Capacitor—20-10 mfd. |
| 37308 | Capacitor—40 mfd. |
| 35016 | Capacitor—1 section of 40 mfd., and 1 section of 100 mfd. |
| 37249 | Capacitor—100 mfd. |
| 37307 | Choke—Filter choke |
| 30868 | Connector—2-contact female connector for reject cable |
| 37625 | Connector—5-contact female connector for record changer cable |
| 12493 | Connector—5-contact female connector for speaker cable |
| 11934 | Connector—6-contact female connector for speaker cable |
| 37626 | Connector—6-contact female power supply cable connector |
| 14409 | Connector—7-contact female connector for power supply cable |
| 35052 | Connector—8-contact male connector for attenuator cable |
| 32059 | Holder—Fuse holder with extractor |
| 33960 | Plug—Single contact phono input cable plug |
| 36637 | Receptacle—A.C. receptacle |
| 34761 | Resistor—10 ohms, ½ watt |
| 37623 | Resistor—27 ohms, 3 watts |
| 37624 | Resistor—50 ohms, 5 watts |
| 30685 | Resistor—33,000 ohms, ½ watt |
| 37341 | Resistor—Voltage divider comprising 1 section of 2,000 ohms, and 1 section of 8,500 ohms |
| 33165 | Socket—2-contact female socket |
| 37255 | Socket—3-contact female socket |
| 35279 | Socket—5 prong tube socket |
| 31251 | Socket—8 prong tube socket |
| 37340 | Transformer—105-120 volt, 25 cycle power transformer |
| 37342 | Transformer—105-120 volt, 25 cycle bias transformer |
| 37339 | Transformer—105-125 volt, 50-60 cycle bias power transformer |
| 37245 | Transformer—110-125-150-210-240 volt, 50-60 cycle power transformer |
| 37247 | Transformer—Output transformer |

## POWER AND AMPLIFIER UNIT QU8

| STOCK No. | DESCRIPTION |
|---|---|
| 30859 | Capacitor—.025 mfd. |
| 37250 | Capacitor—20 mfd. |
| 37248 | Capacitor—20-10 mfd. |
| 37308 | Capacitor—40 mfd. |
| 35016 | Capacitor—1 section of 40 mfd., and 1 section of 100 mfd. |
| 37249 | Capacitor—100 mfd. |
| 37307 | Choke—Filter choke |
| 30868 | Connector—2-contact female connector for reject cable |
| 37625 | Connector—5-contact female connector for record changer cable |
| 12493 | Connector—5-contact female connector for speaker cable |
| 11934 | Connector—6-contact female connector for speaker cable |
| 37626 | Connector—6-contact female power supply cable connector |
| 14409 | Connector—7-contact female connector for power supply cable |
| 35052 | Connector—8-contact male connector for attenuator cable |
| 32059 | Holder—Fuse holder with extractor |
| 33960 | Plug—Single contact phono input cable plug |
| 36637 | Receptacle—A.C. receptacle |
| 37253 | Relay—Bias relay switch |
| 37254 | Relay—Record changer relay switch |
| 34761 | Resistor—10 ohms, ½ watt |
| 37623 | Resistor—27 ohms, 3 watts |
| 37624 | Resistor—50 ohms, 5 watts |
| 37252 | Resistor—Voltage divider comprising a 250, 940, and a 400 ohm section |
| 37251 | Resistor—2,000 ohms, 5 watts |
| 30685 | Resistor—33,000 ohms, ½ watt |
| 33165 | Socket—2-contact female socket |
| 37255 | Socket—3-contact female socket |
| 35279 | Socket—5-prong tube socket |
| 31251 | Socket—8-prong tube socket |
| 37246 | Transformer—105-120 volts, 50-60 cycle bias power transformer |
| 37245 | Transformer—110-125-150-210-240 volts, 50-60 cycle power transformer |
| 37247 | Transformer—Output transformer |

## QU-7, QU-8 Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES QU7** |
| 38192 | Arm—Pickup arm shell only—less mechanism, support arm pins, and shielded cable |
| 38194 | Arm—Pickup support arm complete—less bushings and drive pins |
| 14291 | Armature—Pickup armature assembly |
| 34550 | Bushing—Rubber bushing or support arm |
| 32635 | Cable—Pickup lift cable |
| 38215 | Cable—Shielded pickup cable (8) |
| 38216 | Catch—Pickup head catch |
| 14672 | Coil—Pickup coil |
| 38197 | Cover—Insulating cover |
| 38193 | Head—Pickup arm head shell—less mechanism |
| 37291 | Mechanism—Pickup mechanism complete |
| 38198 | Pin—Pin to attach head to arm (⅛-inch dia.) |
| 38199 | Pin—Pin to attach support arm to shell (3/32-inch dia.) |
| 38196 | Screw—Needle screw |
| 38217 | Screw—Pickup mechanism support screw |
| 38213 | Spring—Needle point weight adjustment spring |
| 38214 | Stud—Shoulder stud to hold tension spring and head catch |
| | **MOTORBOARD ASSEMBLIES QU7** |
| 38218 | Base—Pickup arm mounting base |
| 37647 | Board—Motorboard with welded and riveted studs and bearings—less operating parts |
| 37649 | Escutcheon—Index escutcheon |
| 37654 | Spindle—Turntable spindle and pin |
| 37652 | Turntable—Turntable complete |
| 37653 | Washer—Turntable thrust washers comprising 1 felt and 2 bronze washers |
| | **OPERATING MECHANISMS QU7** |
| 33582 | Arm—Drive arm and hub for turntable shaft—part of phono motor flexible coupling |
| 37659 | Arm—Drive arm, hub and rubber disc for motor shaft—part of phono flexible coupling |
| 37640 | Base—Cutter mechanism support base |
| 33984 | Bracket—Record discriminating lever mounting bracket (3) |
| 36277 | Bumper—Rubber bumper |
| 14819 | Cable—Pickup shield cable and plug from shorting switch |
| 33987 | Cam—Cam and gear assembly (42) |
| 36531 | Cam—Trip lever cam and link (58) |
| 37686 | Clutch—Trip lever clutch and trip lever—less friction finger, trip lever cone, link and adjustment stud (5) |
| 36265 | Finger—Trip lever friction finger (7) |
| 33581 | Frame—Phono motor flexible coupling frame only |
| 37685 | Gear—Pinion drive gear for spindle shaft—less set screw and lock ring |
| 36267 | Gear—Rack gear (long) (41) |
| 32880 | Gear—Rack gear (short) (40) |
| 31121 | Gear—Record separator shaft gear (10) |
| 36830 | Guide—Lift cable guide (2) |
| 33982 | Guide—Main spring guide (11) |
| 37658 | Lever—Index lever (12) |
| 37974 | Lever—Locating lever and pawl (14) |
| 33985 | Lever—Main lever assembly (15) |
| 31140 | Lever—Pickup life cable lever and spring (16) (31) |
| 3765 | Lever—Record discriminating lever and pawl (17) |
| 36476 | Lever—Record separator elevating lever with adjustment screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 36525 | Link—Index link assembly |
| 37684 | Nut—Flexible coupling adjustment nut—less set screw |
| 31133 | Pawl—Trip pawl assembly (22) |
| 36268 | Pin—Pin to fasten gear to separator shaft (23) |
| 36773 | Plug—3 prong male plug |
| 37682 | Rest—Recorder arm rest |
| 36281 | Ring—Retaining ring for set screw in pinion drive gear |
| 4295 | Screw—Cutter mechanism support base set screw—No. 10-32x¼ headless |
| 36477 | Screw—No. 6-32 ball point screw for record separator elevating lever |
| 36276 | Screw—No. 6-32 headless set screw for pinion drive gear |
| 31118 | Screw—No. 10-32x5/16-in. cone pointed set screw for record separator shelf |
| 32869 | Screw—No. 10-32x5/16-in. machine screw for record separator shelf |
| 14188 | Screw—No. 10-32x7/16-in. fillister head—cone pointed set screw for flexible coupling |
| 33983 | Screw—Record separator elevating lever pivot screw |
| 33990 | Separator—Record separator knife (25) |
| 33989 | Shelf—Record separator rotating shelf—less set screws (27) |
| 37657 | Shaft—Record separator shaft (34) |
| 37642 | Sleeve—Cutter mechanism support sleeve |
| 3676 | Spring—Cam gear pawl spring |
| 3666 | Spring—Lift cable spring (31) |
| 14190 | Spring—Locating lever pawl spring (28) |
| 37975 | Spring—Locating lever spring (35) |
| 32882 | Spring—Main lever tension spring (43) |
| 36278 | Spring—Pickup arm feed spring located on pivot shaft |
| 33994 | Spring—Record discriminating lever spring (flat) (9) |
| 31136 | Spring—Tension spring for roller index link |
| 36279 | Spring—Tension spring for trip pawl |
| 36921 | Spring—Trip detaining lever spring (33) |
| 31147 | Strip—Complete set for rubber strips for flexible coupling (6) |
| 36271 | Stud—No. 4-40 hex stud for trip lever clutch adjustment |
| 36529 | Switch—Automatic switch (54) |
| 38995 | Switch—Automatic switch less cam, base and shaft |
| 34875 | Switch—Pickup shorting switch |

| STOCK No. | DESCRIPTION |
|---|---|
| 31608 | Washer—"C" washer for index link |
| 2917 | Washer—"C" washer for mounting main lever, cone and gear, trip pawl, locating lever, lift cable lever, trip lever and cone, record discriminating lever, flexible coupling, and index lever |
| 8078 | Washer—Spring washer for record discriminating lever |
| 20165 | Washer—Spring washer for trip detaining lever and main lever |
| 37683 | Washer—Spring washer for under flexible coupling ad justment nut |
| | **RECORDER ASSEMBLY QU7** |
| 37640 | Base—Main recorder base |
| 37162 | Bracket—Feed bracket |
| 37161 | Bracket—Stop bracket |
| 37639 | Carriage—Main carriage |
| 37163 | Center—Feed screw center (Long) |
| 37165 | Center—Feed screw center (Short) |
| 44149 | Flange—Drive flange assembly |
| 37169 | Nut—Recorder head spring adjusting nut |
| 19721 | Pinion—Pinion gear |
| 36907 | Recorder—Recorder head |
| 37164 | Screw—Feed screw with gear |
| 32462 | Screw—Recorder head pivot screw and nut |
| 37170 | Screw—Recorder head spring adjusting screw |
| 19703 | Screw—Yoke pivot screw and nut |
| 44150 | Shaft—Pinion shaft |
| 37642 | Sleeve—Base adjusting sleeve |
| 37168 | Spring—Recorder head tension spring |
| 37641 | Yoke—Main yoke with pin—less pivot screws |
| | **MOTOR ASSEMBLIES QU7** |
| 12051 | Capacitor—2 mfd., 1,000 volts, used in conjunction with 50 and 60 cycle motors |
| 13101 | Capacitor—4 mfd., 250 volts used in conjunction with 25 cycle motors |
| 37666 | Motor—105-115 volt, 25 cycle turntable motor |
| 37665 | Motor—105-115 volt, 50 cycle turntable motor |
| 37664 | Motor—105-115 volt, 60 cycle turntable motor |
| 37663 | Support—Motor support plate |
| | **MICROPHONE ASSEMBLIES QU7** |
| 33751 | Diaphragm—Replacement diaphragm for Model MI-6226-D microphone |
| MI-6226-D | Microphone—Aero-dynamic microphone complete—less stand and connection plug |
| 37244 | Plug—3 prong microphone plug and shell |
| MI-3232-A | Stand—Microphone stand complete for Model MI-6226-D mike |
| | **RECORDER ASSEMBLY MI-4832 QU8** |
| 37171 | Base—Main recorder base |
| 37161 | Bracket—Carriage stop bracket |
| 37162 | Bracket—Feed bracket engages with feed screw |
| 37160 | Carriage—Main carriage and pin |
| 37163 | Center—Conical feed screw center—used on drive end of recorder assembly |
| 37165 | Center—Conical feed screw center—used on pivot end of recorder assembly |
| 36906 | Cutter—Recorder cutter head only |
| 37167 | Flange—Drive flange with three pins |
| 37169 | Nut—Recorder head tension spring adjusting nut |
| 19721 | Pinion—Feed screw drive pinion |
| MI-4832 | Recorder—Recorder assembly complete |
| 37164 | Screw—Feed screw with gear |
| 37170 | Screw—Recorder head spring adjusting screw |
| 19703 | Screw—Yoke pivot screw and nut |
| 37166 | Shaft—Drive pinion shaft only |
| 37173 | Sleeve—Main base adjusting sleeve |
| 37168 | Spring—Recorder head tension spring |
| 37172 | Yoke—Main yoke with pin—less pivot screws |
| | **MICROPHONE ASSEMBLIES QU8** |
| 32212 | Adapter—Microphone to stand adapter |
| MI-4036K | Microphone—Junior velocity microphone complete—less stand, adapter, and connection plug |
| 37244 | Plug—3-prong microphone plug and shell |
| 20911 | Ribbon—Replacement ribbon only for microphone |
| MI-6232A | Stand—Microphone stand complete—less adapter, microphone and cord |

**Additional Automatic Mechanism Parts not shown in Fig. 1 to 8 inclusive. QU8**

| | |
|---|---|
| 38002 | Switch Assembly—Pickup shorting |
| 38014 | Screw—Pickup arm brake |
| 38025 | Pin—Solenoid |
| 38026 | Pin—Magazine slide arm |
| 38027 | Pin—Magazine slide arm lever |
| 38028 | Pin—Reverse throwout arm |
| 38029 | Pin—Pickup pivot |
| 38035 | Ball Bearing—Tone arm |
| 38041 | Spring—Pickup arm brake |
| 38042 | Spring—Pickup arm lift shaft |
| 38049 | Spring—Clutch throwout |
| 38051 | Spring—Trip switch |

# Replacement Parts (Continued)



| STOCK No. | DESCRIPTION |
|---|---|
| 38053 | Spring—Solenoid wedge |
| 38054 | Spring—Ball joint |
| 38056 | Turntable Shaft Bushing |
| 38058 | Record Tray Bushing |
| 38061 | Collar—¼-inch shaft |
| 38065 | Pivot Bushing |
| 38067 | Pickup Center Bolt |
| 38077 | Turntable Felt |
| 38085 | Turntable Drive Facing—heavy |
| 38086 | Turntable Drive Facing—light |
| 38087 | Turntable Drive Facing—medium |
| 38091 | Pickup Arm Friction Cam Facing |
| 38093 | Reverse Guide Pin Tubing |
| 38096 | Automatic Stop Lever Washer |
| 38099 | Rubber Bushing |
| 38109 | Turntable Assembly |
| 38112 | ¼-inch Allen Head Wrench |
| 38125 | Pickup Arm Stop Lever—Bracket and pin assembly |
| 38133 | Main Shaft Assembly |
| 38134 | Magazine Support Assembly |
| 38142 | Record Bumper—left |
| 38143 | Record Bumper—right |
| 38145 | ¼-in. x 20 x 1.125-in. Hex Head Cap Screw |
| 38146 | Cotter Pin—1/16-in. dia. x ⅜-in. |
| 38147 | Cotter Pin—1/16-in. dia. x ½-in. |
| 38148 | Cotter Pin—3/32-in. dia. x ½-in. |
| 38149 | Cotter Pin—⅛-in. dia. x ¼-in. |
| 38150 | No. 00x¾-in. Taper Pin |
| 38152 | No. 00x¾-in. Taper Pin, Nickel Plated |
| 38153 | No. 00x⅞-in. Taper Pin |
| 38154 | No. 00x1¼-in. Taper Pin |
| 38155 | No. 00x1-in. Taper Pin |
| 38156 | No. 00x1¼-in. Taper Pin |
| 38157 | No. 0x¾-in. Taper Pin |
| 38158 | No. 0x1-in. Taper Pin |
| 38159 | No. 1 x 1¼ in. Taper Pin |
| 38160 | No. 0000x⅜-in. Taper Pin |
| 38161 | No. 1x1¼-in. Taper Pin |
| 38162 | No. 2 Woodruff Key |
| 38118 | TT Drive Shaft Assembly |
| 38163 | Drive Shaft—Main motor |
| 38164 | Pivot Bushing—Pickup head |
| 38165 | Base Plate—Die cast plate |
| 38166 | Rubber Ins. Bushing—Pickup head |
| 38167 | Tone Arm Assembly |
| 38182 | Turntable |
| 38168 | Drive Motor (60 cycle) |
| 38169 | 5-Prong Plug—Motor leads |
| 38170 | Gear Box (60 cycle) |
| 38171 | Friction Drive Assembly |
| 38172 | Flex Coupling Assembly |
| 38173 | Light Socket (brown) |
| 38174 | Light Shade and Pin Assembly |
| 38175 | Pin—Lamp Shade |
| 38176 | Reflector—Compartment lamp |
| 38177 | Plug and Lead Assembly |
| 38178 | Bracket and Switch Assembly |
| 38180 | Light Shade Bracket |
| 38181 | Drive Motor (50 cycle) |
| 38151 | Gear Box (50 cycle) |

### SPEAKER ASSEMBLIES

| | |
|---|---|
| 14604 | Coil—Neutralizing coil used in RL-76B2 only |
| 37311 | Coil—900 ohm field coil for RL-76B2 |
| 37312 | Coil—3,000 ohm field coil for RL-76B3 |
| 37310 | Cone—Coil and voice coil assembly for either RL-76B2 or RL-76B3 |
| 31539 | Plug—5-prong male plug for RL-76B2 |
| 11953 | Plug—6-prong male plug for RL-76B3 |

### MISCELLANEOUS ASSEMBLIES QU7

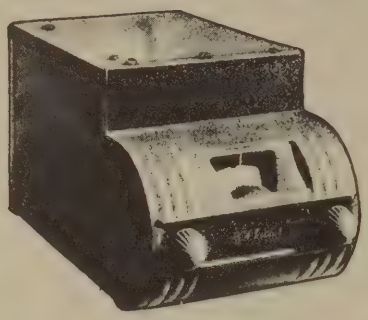
| | |
|---|---|
| 37820 | Back—Cabinet back only |
| 37172 | Base—Flanged cutter base with set screw |
| 37287 | Bearing—Pickup unit pivot bearing |
| 37669 | Bracket—Multiple lamp bracket |
| 37670 | Bracket—Tuning tube clip bracket |
| 37267 | Brush—Dust brush for recording |
| 37832 | Cable—Shielded cable and 3 contact socket for microphone or cutter |
| 30766 | Cap—Magic Eye cap for function panel |
| 37262 | Clamp—Spring steel retaining clamp for bottom of dial |
| 37263 | Clamp—Spring steel retaining clamp for top of dial |
| 30716 | Clip—"Magic Eye" mounting clip and thumb screw |
| 34285 | Clip—Tuning tube clip and thumb screw |
| 12493 | Connector—5 contact female connector for band indicator cable |
| 37264 | Control—344 ohm and 250 ohm dual speaker control |
| 33910 | Cup—New needle cup |
| 37320 | Decalcomania—"Master Control" decal |
| 37323 | Decalcomania—"Microphone" decal |
| 37319 | Decalcomania—"Microphone Level" decal |
| 37324 | Decalcomania—"Motor" decal |
| 36603 | Decalcomania—"Power" decal |
| 37318 | Decalcomania—"Radio" decal |
| 35392 | Decalcomania—"RCA Victor" decal |
| 36386 | Decalcomania—"RCA Victrola" trade mark decal |
| 37321 | Decalcomania—"Recorder" decal |
| 37322 | Decalcomania—"Reject" decal |
| 37326 | Dial—Function indicator dial |
| 37325 | Dial—Station selector dial |
| 37258 | Frame—Dial frame less plugs, "Magic Eye" clip thumb screw, screen, and wooden lamp housing |
| 37884 | Fuse—3 Amperes, 250 volt fuse |
| 37883 | Fuse—5 Amperes, 250 volt fuse |
| 37824 | Housing—Compartment lamp cast housing only—less switch socket and reflector |
| 37667 | Housing—Function lamp housing only less tube clip, bracket, switch, and cable |
| 37259 | Housing—Wooden band indicator lamp housing |
| 13103 | Jewel—Pilot light jewel only |
| 37256 | Knob—Large control knob and spring |
| 37257 | Knob—Small control knob and spring |
| 11891 | Lamp—6.3 volt pilot lamp—Mazda No. 44 |
| 36728 | Lamp—7 watts frosted compartment lamp bulb |
| 37286 | Pivot—Pickup unit pivot screw and locknut |
| 37266 | Plate—11-in. finished auxiliary plate for turntable |
| 37290 | Plug—2 prong male plug and shell for cutter base plunger switch cable and compartment lamp cable; or phono motor power cable |
| 30870 | Plug—2 prong male plug for reject button cable |
| 37244 | Plug—3 prong male plug and shell for pilot lamp cable |
| 12567 | Plug—5 prong male plug used on dial frame cable |
| 11953 | Plug—6 prong male plug for function panel |
| 31048 | Plug—Single contact plug for phono input cable |
| 37261 | Pointer—Station selector pointer and carriage |
| 37825 | Reflector—Compartment lamp reflector only—less housing lamp |
| 37260 | Screen—Diffusing screen for Stk. No. 37259 housing |
| 37288 | Screen—Diffusing screen for function lamp housing |
| 33438 | Screw—Thumb screw for "Magic Eye" clip |
| 37800 | Shade—Compartment lamp shade assembly |
| 31199 | Shield—Lamp shield for jewel light |
| 37173 | Sleeve—Cutter base adjusting sleeve |
| 31364 | Socket—Bayonet socket with clip for pilot lamp |
| 19026 | Socket—Compartment lamp socket |
| 30300 | Spring—Control knob spring |
| 37265 | Switch—2 gang speaker switch |
| 37668 | Switch—Master power switch |
| 37306 | Switch—Motor control toggle switch |
| 32875 | Switch—Phono motor off-on switch |
| 37289 | Switch—Plunger switch used in cutter base |
| 37305 | Switch—Reject button switch—less plug |
| 14609 | Transformer—Input transformer |

### MISCELLANEOUS ASSEMBLIES QU8

| | |
|---|---|
| 37172 | Base—Flanged cutter base with set screw |
| 37669 | Bracket—Multiple lamp bracket |
| 37670 | Bracket—Tuning tube clip bracket |
| 37267 | Brush—Dust brush for recording |
| 30766 | Cap—Magic Eye cap for function panel |
| 37262 | Clamp—Spring steel retaining clamp for bottom of dial |
| 37263 | Clamp—Spring steel retaining clamp for top of dial |
| 30716 | Clip—"Magic Eye" mounting clip and thumb screw |
| 34285 | Clip—Tuning tube clip and thumb screw |
| 37832 | Connector—3-contact female socket as used on cutter and microphone cables |
| 12493 | Connector—5-contact female connector for band indicator cable |
| 37264 | Control—344 ohm and 250 ohm dual speaker control |
| 37320 | Decalcomania—"Master Control" decal |
| 37323 | Decalcomania—"Microphone" decal |
| 37319 | Decalcomania—"Microphone Level" decal |
| 37324 | Decalcomania—"Motor" decal |
| 36603 | Decalcomania—"Power" decal |
| 37318 | Decalcomania—"Radio" decal |
| 35392 | Decalcomania—"RCA Victor" decal |
| 36386 | Decalcomania—"RCA Victrola" trade mark decal |
| 37321 | Decalcomania—"Recorder" decal |
| 37322 | Decalcomania—"Reject" decal |
| 37326 | Dial—Function indicator dial |
| 37325 | Dial—Station selector dial |
| 37258 | Frame—Dial frame—less plugs, "Magic Eye" clip, thumb screw, screen, and wooden lamp housing |
| 37884 | Fuse—3 Ampere, 250 volt fuse |
| 37883 | Fuse—5 Ampere, 250 volt fuse |
| 37824 | Housing—Compartment lamp cast housing only—less switch socket and reflector |
| 37667 | Housing—Function lamp housing only—less tube clip, brackets, switch, and cable |
| 37259 | Housing—Wooden band indicator lamp housing |
| 13103 | Jewel—Pilot light jewel only |
| 37256 | Knob—Large control knob and spring |
| 37257 | Knob—Small control knob and spring |
| 11891 | Lamp—6.3 volt pilot lamp—Mazda No. 44 |
| 37823 | Lamp—115 volt, 7½ watt frosted compartment lamp bulb |
| 37266 | Plate—11 inch finished auxiliary plate for turntable |
| 37270 | Plug—2-contact male plug for phono motor power cable |
| 37290 | Plug—2-prong male plug and shell for cutter base plunger switch cable and compartment lamp cable |
| 30870 | Plug—2-prong male plug for reject button cable |
| 37244 | Plug—3-prong male plug and shell for pilot lamp cable |
| 12567 | Plug—5-prong male plug used on dial frame cable |
| 11953 | Plug—6-prong male plug for function panel |
| 31048 | Plug—Single contact plug for phono input cable |
| 37261 | Pointer—Station selector pointer and carriage |
| 37825 | Reflector—Compartment lamp reflector only—less housing and lamp |
| 37288 | Screen—Diffusing screen for function lamp housing |
| 37260 | Screen—Diffusing screen for Stock No. 37259 housing |
| 33438 | Screw—Thumb screw for "Magic Eye" clip |
| 31199 | Shield—Lamp shield for jewel light |
| 37173 | Sleeve—Cutter base adjusting sleeve |
| 31364 | Socket—Bayonet socket with clip for pilot lamp |
| 30900 | Spring—Control knob spring |
| 37265 | Switch—2-gang speaker switch |
| 37668 | Switch—Master power switch |
| 37306 | Switch—Motor control toggle switch |
| 32875 | Switch—Phono motor off-on switch |
| 37289 | Switch—Plunger switch used in cutter base |
| 37305 | Switch—Reject button switch—less plug |
| 14609 | Transformer—Input transformer |

# MODEL 8M

## Five-Tube, Superheterodyne Automobile Receiver



*Model 8M*

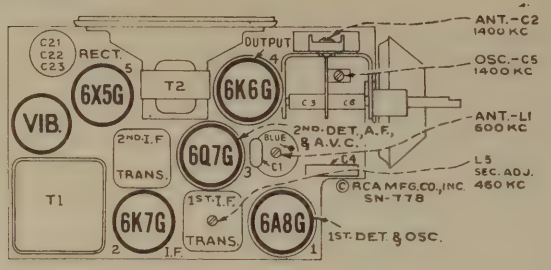



*Figure 1—Radiotron, Component Part, and Trimmer Locations*

## Electrical Specifications

RADIOTRON COMPLEMENT
(1) RCA-6A8-G..... First Detector—Oscillator
(2) RCA-6K7-G..... I-F Amplifier
(3) RCA-6Q7-G..... Second Det., A-F Amp., and A.V.C.
(4) RCA-6K6-G..... Power Output
(5) RCA-6X5-G..... Full-Wave Rectifier

Tuning Range..... 550 to 1,550 kc

POWER OUTPUT RATING
Maximum..... 3.3 watts
Undistorted..... 1.75 watts

LOUDSPEAKER
Type..... 5-inch Electrodynamic
Voice-Coil Impedance..... 3.2 ohms at 400 cycles

POWER SUPPLY RATING
Supply Voltage..... 6.3 volts
Current Drain..... 6 amp.
Fuse Protection..... 15 amp.

PILOT LAMP..... Mazda No. 51, 7.5 volts, 0.2 amp.

## Alignment Procedure

Remove all external screws to remove the chassis from the ase. Hold the condenser gang in full-mesh position while rotating the dial scale so the low frequency (end) calibration mark is in line with the pointer. Loosen the three nuts in the front of the scale assembly for this adjustment. When referring to scale settings hold the front panel in place.

Perform alignment in proper order tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 1 and 4.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figure 3. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

Connect the "low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Ant. Cable" means test oscillator signal should be applied to the receiver at the connector on the antenna cable extending from the receiver chassis. "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal is received from a station or the local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

| Order of Alignment | Test Oscillator | | | Receiver Dial Setting | Circuit to Adjust | Adjustment Symbols | Adjust to Obtain |
|---|---|---|---|---|---|---|---|
| | Connection to Receiver | Dummy Antenna | Frequency Setting | | | | |
| 1 | 6K7-G I-F Grid Cap | .001 Mfd. | 460 kc | No Signal 550-750 kc | 2nd I-F Trans. | L6 | Max. (peak) |
| 2 | 6A8-G Det. Osc. Grid Cap | .001 Mfd. | 460 kc | No Signal 550-750 kc | 1st I-F Trans. | L4 and L5 | Max. (peak) |
| 3 | Ant. Cable | 100 Mmfd. | 1,400 kc | 1,400 kc | Osc. | C5 | Max. (peak) |
| 4 | Ant. Cable | 100 Mmfd. | 1,400 kc | 1,400 kc | H-F Ant. | C2 | Max. (peak) |
| 5 | Ant. Cable | 100 Mmfd. | 600 kc | Approx. 600 kc * | L-F Ant. | L1 | Max. (peak)† |
| 6 | Ant. Cable | 100 Mmfd. | 1,400 kc | 1,400 kc | H-F Ant. | C2 | Max. (peak) |

* Adjust dial for maximum output at or near 600 kc setting.

† The same inductance may be obtained for two different settings of L1. Use either setting.

**Antenna Compensating Capacitor.**—Trimmer C2 is accessible from the bottom of the receiver case (near speaker opening) and should be readjusted to give maximum signal output on a weak station or oscillator signal at approximately 1,400 kc, after the instrument is installed. The antenna should be connected to the receiver during this adjustment. Refer to Alignment Table operation number 6.

NOTE: *Change C1 from 680 mmfd to 300-400 mmfd for use with high capacity built-in antennas.*

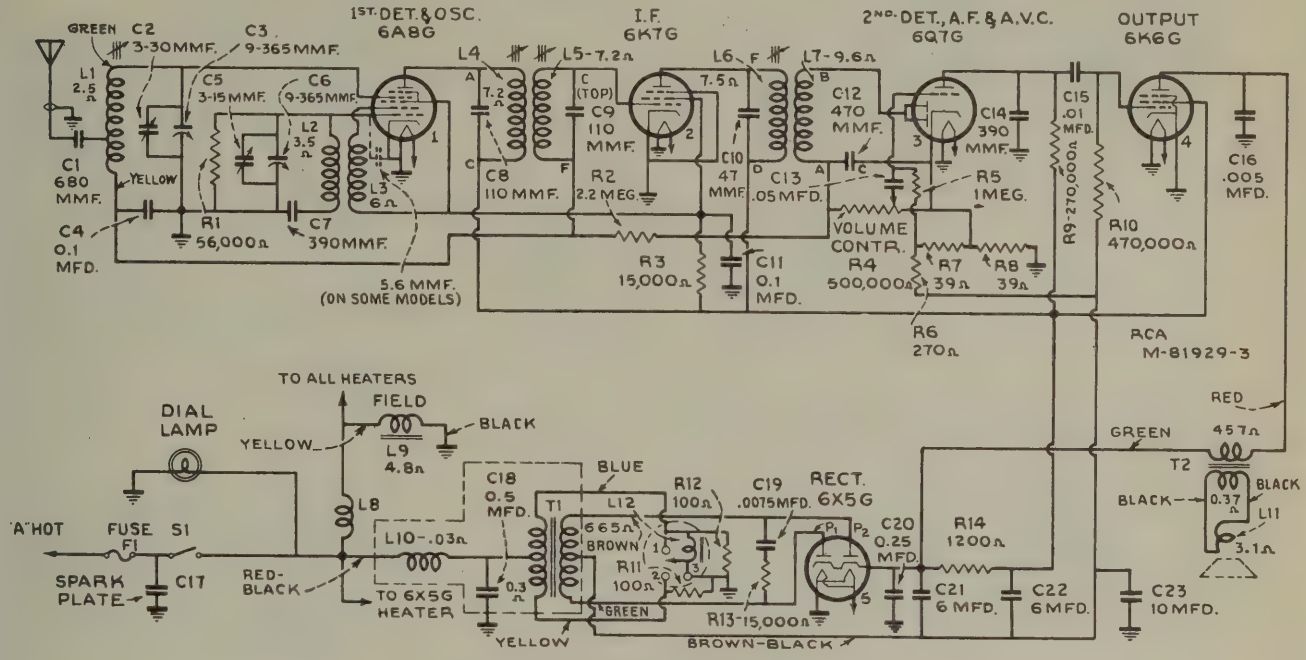



*Figure 2—Schematic Circuit Diagram*

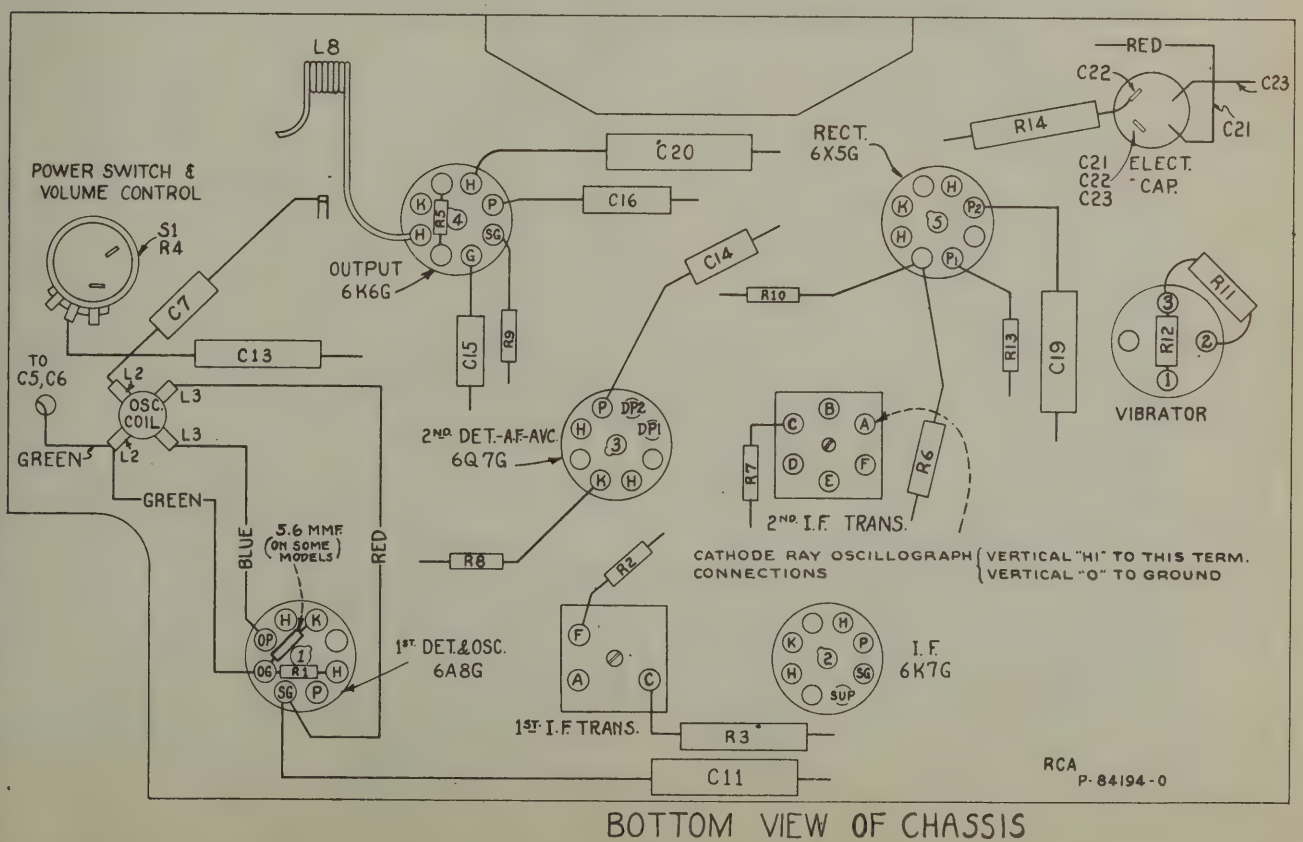



*Figure 3—Component Part Locations and R-F Wiring Diagram*

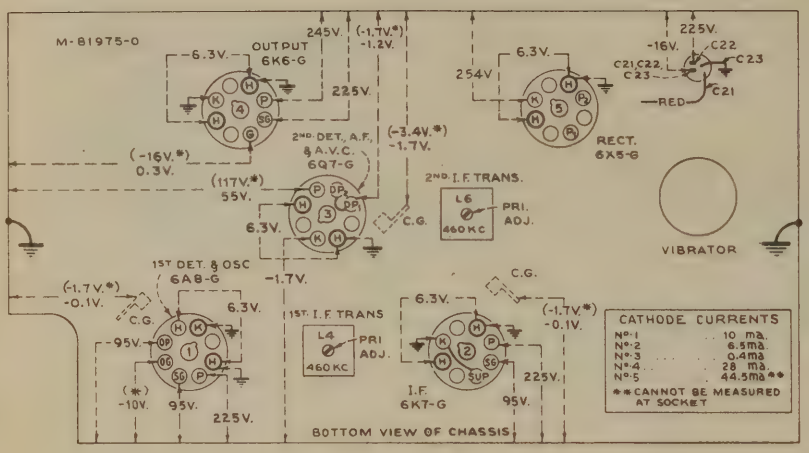



*Figure 4—Radiotron Socket Voltages and Trimmer Locations*
(Measured at 6.3 volts battery supply—Volume control minimum—No signal input)

***Note: Two voltage values are shown for some readings. The value shown in parentheses with asterisk (*) indicates operating conditions without voltmeter loading. The other value (generally lower) is the actual measured voltage and differs from the value shown in parentheses because of the additional loading of the voltmeter.***

### Vibrator Hum:

Some instruments may produce a mechanical hum which is accentuated when the instrument is mounted in a car and attached to the instrument panel. If this condition is apparent, a strip of felt 1⅜-inch x 1¼-inch x ⅛-inch should be installed between the vibrator unit and the power transformer, and cemented to the transformer.

### Dial Slippage:

The following procedure is suggested to overcome slippage of the dial drive, resulting from the dial scale rubbing against the case.

(a) Remove the three nuts which hold dial in place and take dial off of dial drive drum.
(b) Loosen two set screws on hub of dial drive drum. Move drum as far as possible toward chassis, allowing just enough clearance to prevent its scraping against the two brass screw heads.
(c) Replace dial and make sure that the dial scale is concentric with the shaft, before tightening the dial mounting nuts.
(d) Mount chassis as far back in case as possible.
(e) Mount chassis so that dial is centered from left to right with respect to the case.
(f) If dial scale is loose in its mounting, slightly crimp edge of brass mounting with diagonal cutters.
(g) See that rubber grommets are in place in shaft holes of case.
(h) Mount the case-end as far forward as possible.

### Loudspeaker Cones:

Speaker marked 84147-2 is used in 8M, but has two types of cones, which vary as to mounting dimension of the spider suspension:

**Stock No. 35484** cone fits speaker marked 84147-2 with a 2⅜ inch dimension between suspension points.

**Stock No. 30782** cone fits speaker marked 84147-2 with a 2-9/16 inch dimension between suspension points.

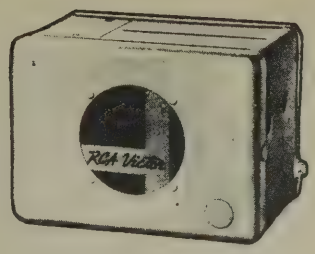
# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

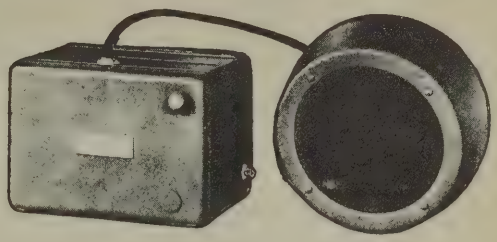
| Stock No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 11350 | Cap—Grid contact cap—Package of 5 |
| 30637 | Capacitor—Adjustable trimmer (C2) |
| 12405 | Capacitor—47 Mmfd. (C10) |
| 14262 | Capacitor—110 Mmfd. (C8, C9) |
| 13894 | Capacitor—390 Mmfd. (C14)—Package of 5 |
| 30625 | Capacitor—390 Mmfd. (C7) |
| 30673 | Capacitor—470 Mmfd. (C12) |
| 14498 | Capacitor—680 Mmfd. (C1)—Package of 5 |
| 4838 | Capacitor—.005 Mfd. (C16) |
| 30626 | Capacitor—.0075 Mfd. (C19) |
| 14393 | Capacitor—.01 Mfd. (C15) |
| 4886 | Capacitor—.05 Mfd. (C13) |
| 4839 | Capacitor—0.1 Mfd. (C4, C11) |
| 12484 | Capacitor—0.25 Mfd. (C20) |
| 30634 | Capacitor Pack—Comprising two 6 Mfd. and one 10 Mfd. sections (C21, C22, C23) |
| 4358 | Clamp—Mounting clamp for capacitor pack, Stock No. 30634 |
| 30639 | Coil—Antenna coil—less shield (L1) |
| 30656 | Coil—Oscillator coil (L2, L3) |
| 30627 | Condenser—2-gang variable tuning condenser (C3, C5, C6) |
| 30632 | Cord—Drive cord—Package of 5 |
| 30629 | Dial—Dial scale and holder |
| 30630 | Drum—Dial drive drum, complete with set screws |
| 12415 | Resistor—39 ohms, insulated, ½ watt (R7, R8)—Package of 5 |
| 30540 | Resistor—100 ohms, insulated, ½ watt (R11, R12)—Package of 5 |
| 13744 | Resistor—270 ohms, carbon type, ½ watt (R6)—Package of 5 |
| 6134 | Resistor—1,200 ohms, carbon type, 1 watt (R14)—Package of 5 |
| 12695 | Resistor—15,000 ohms, insulated, ½ watt (R13)—Package of 5 |
| 14166 | Resistor—15,000 ohms, carbon type, 2 watt (R3) |
| 12286 | Resistor—56,000 ohms, insulated, ½ watt (R1)—Package of 5 |
| 12199 | Resistor—270,000 ohms, insulated, ½ watt (R9)—Package of 5 |
| 12285 | Resistor—470,000 ohms, insulated, ½ watt (R10)—Package of 5 |
| 13730 | Resistor—1 Megohm, insulated, ½ watt (R5)—Package of 5 |
| 12679 | Resistor—2.2 Megohm, insulated, ½ watt (R2)—Package of 5 |
| 5129 | Ring—Retaining ring for Radiotron shield—Package of 5 |
| 12418 | Screw—No. 8-32 x 3/16-in. slab-head set screw for drum, Stock No. 30630—Package of 10 |
| 30638 | Shield—Radiotron shield |
| 13686 | Socket—4-contact vibrator socket |
| 11196 | Socket—8-contact Radiotron socket |
| 30631 | Spring—Tension spring for drive cord—Package of 10 |
| 14376 | Transformer—First I.F. transformer (L4, L5, C8, C9) |
| 30672 | Transformer—Second I.F. transformer (L6, L7, C10, C12) |
| 30633 | Transformer—Vibrator power transformer (T1, L10, C18) |
| 13688 | Vibrator—Plug-in vibrator (L12) |
| 30628 | Volume Control and "ON-OFF" switch (R4, S1) |
| | **REPRODUCER ASSEMBLIES (84147-2)** |
| 30782 | Cone—Reproducer cone and voice coil (L11) |
| 30781 | Reproducer, complete (L9, L11, T2) |
| 30783 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 5025 | Capacitor—Generator capacitor |
| 5023 | Fuse—15 amp.—Package of 5 |
| 30640 | Housing—Receiver case only |
| 4290 | Insulator—Fuse-holder insulating sleeve—Package of 10 |
| 30642 | Knob—Tuning or volume control knob—Package of 5 |
| 11765 | Lamp—Dial lamp—Package of 5 |
| 7766 | Lead—"A" lead (ammeter end), complete with female section of fuse holder |
| 30641 | Lead—"A" lead (chassis end), complete with male section of fuse holder |
| 30643 | Lead—Shielded antenna lead (chassis end), complete with female section of connector |
| 30645 | Mounting—Complete set of brackets, nuts, washers, and screws for mounting receiver |
| 30644 | Socket—Dial lamp socket and lead |
| 5024 | Suppressor—Distributor suppressor |

# MODELS 8M1 and 8M2

## Six-Tube, Superheterodyne Automobile Receivers



*Model 8M1*



*Model 8M2*

## Electrical Specifications

RADIOTRON COMPLEMENT

(1) RCA-6K7-G..... R-F Amplifier
(2) RCA-6A8..... First Detector—Oscillator
(3) RCA-6K7..... I-F Amplifier
(4) RCA-6Q7-G.... Second Det., A-F Amp., and A.V.C.
(5) RCA-6K6-G..... Power Output
(6) RCA-6X5-G..... Full-Wave Rectifier

TUNING RANGE..... 550 to 1,550 kc

POWER OUTPUT RATINGS

Maximum..... 3.5 watts
Undistorted..... 1.75 watts

LOUDSPEAKER

Type..... Electrodynamic
Voice-Coil Impedance..... 3 ohms at 400 cycles

POWER SUPPLY RATING

Supply Voltage..... 6.3 volts
Current Drain..... 6.6 amperes
Fuse Protection..... 15 ampere

PILOT LAMP..... Mazda No. 51. 7.5 volts, 0.2 amp.

NOTE: *Change C1 from 680 mmfd to 300-400 mmfd for use with high capacity built-in antennas.*

## Alignment Procedure

Calibrate the tuning-dial pointer to the low-frequency calibration mark as outlined under "Dial Pointer Adjustment."

Perform alignment in proper order tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown on figures 8 and 9.

Cathode-ray alignment is preferable; the connections to the chassis are: Vertical "Hi" to yellow volume-control lead, "0" to chassis. If an output indicator is used, connect it across the loudspeaker voice coil and advance the receiver volume control to full-volume position.

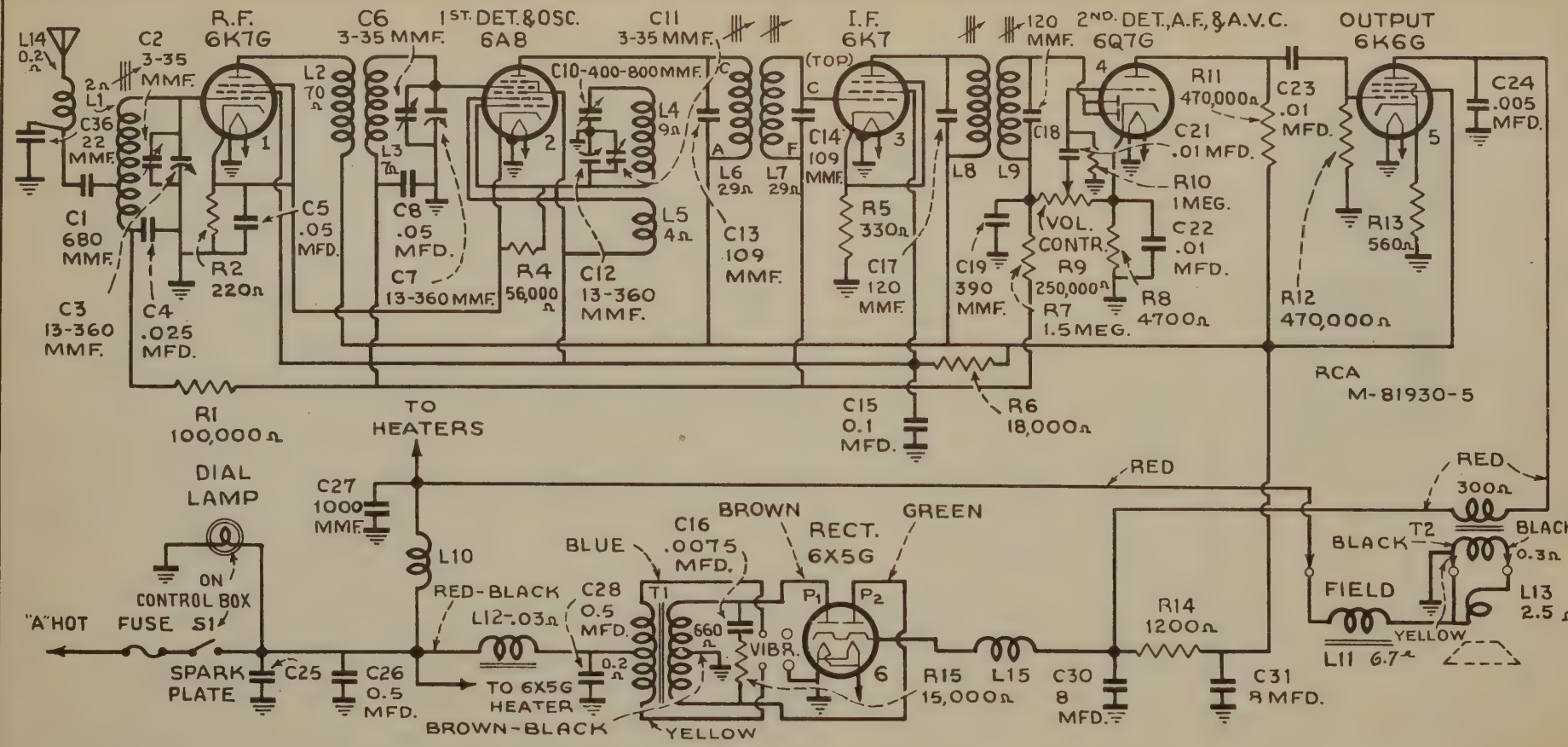
Connect the "low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

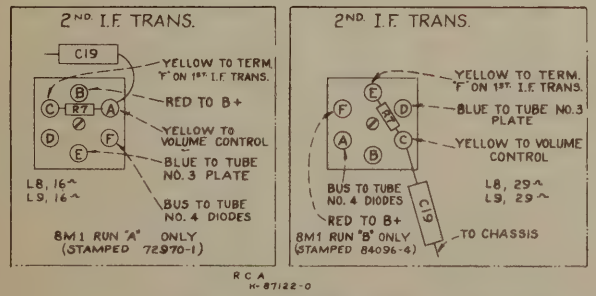
The term "Ant. Conn." means that the test oscillator signal should be applied to the receiver at the antenna connector on side of case. "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal is received from a station or the local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

| Order of Alignment | Test Oscillator | | | Receiver Dial Setting | Circuit to Adjust | Adjustment Symbols | Adjust to Obtain |
|---|---|---|---|---|---|---|---|
| | Connection to Receiver | Dummy Antenna | Frequency Setting | | | | |
| 1 | 6K7 I-F Grid Cap | .001 Mfd. | 260 kc | No Signal 550-750 kc | 2nd I-F Trans. | L8 and L9 | Max. (peak) |
| 2 | 6A8 Det. Grid Cap | .001 Mfd. | 260 kc | No Signal 550-750 kc | 1st I-F Trans. | L6 and L7 | Max. (peak) |
| 3 | Ant. Conn. | 150 Mmfd. | 600 kc | 600 kc | L-F Osc. | C10 | Max. (peak) |
| 4 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | H-F Osc. | C11 | Max. (peak) |
| 5 | Ant. Conn. | 150 Mmfd. | 600 kc | Rock Thru 600 kc | L-F Osc. | C10 | Max. (peak) |
| 6 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | H-F Osc. | C11 | Max. (peak) |
| 7 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | Det. | C6 | Max. (peak) |
| 8 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | Ant. | C2* | Max. (peak) |

*** Re-adjust C2 after installation as outlined under "Antenna Compensating Capacitor."**




*—Second I-F Transformer Connections (Model 8M1)*

Refer to Note No. 1 in Replacement Parts list.

*—Schematic Circuit Diagram (Model 8M1)*

Refer to Figure 3 and Note No. 1 in Replacement Parts list before servicing these receivers.

## MODEL 8M1

**Vibrator Power Unit:**

A limited number of 8M1 auto receivers have power units which contain a reactor-capacitor combination in the filter circuit, instead of the usual resistor-capacitor combination. The circuit corresponds exactly to the right diagram of Figure 5 in the 8M1-8M2 Service Note. R-14 has been removed from the circuit.

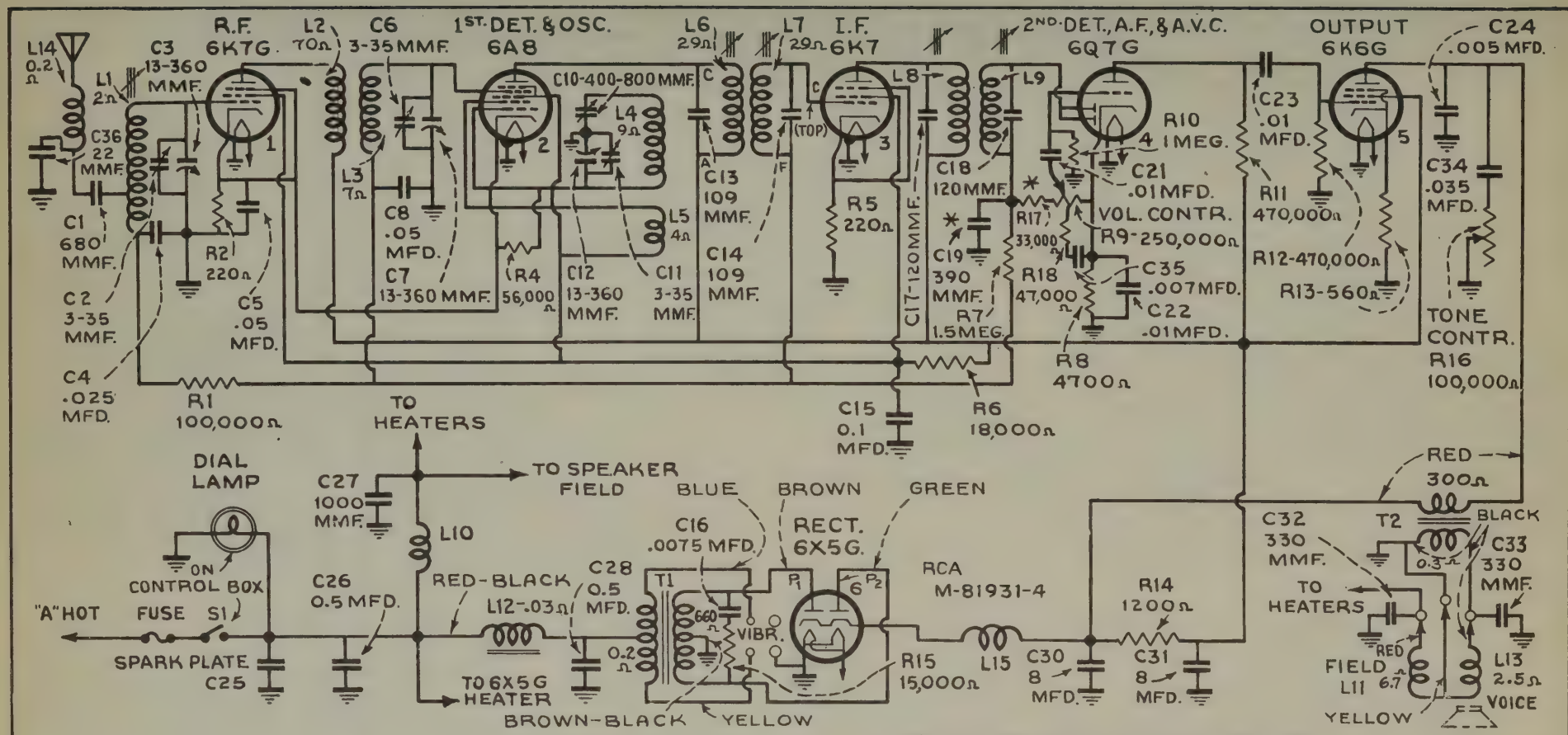



*Figure 2—Schematic Circuit Diagram (Model 8M2)*

Refer to Figures 4, 5, and Notes No. 2, 3, and 4 in Replacement Parts list before servicing these receivers.
* R17 is 47,000 ohms and C19 is 265 mmfd. on Model 8M2, Run "B."

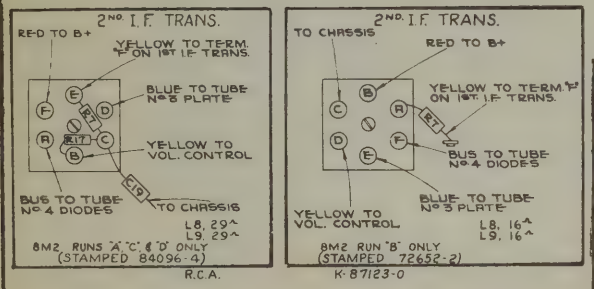



*Figure 4—Second I-F Transformer Connections (Model 8M2)*

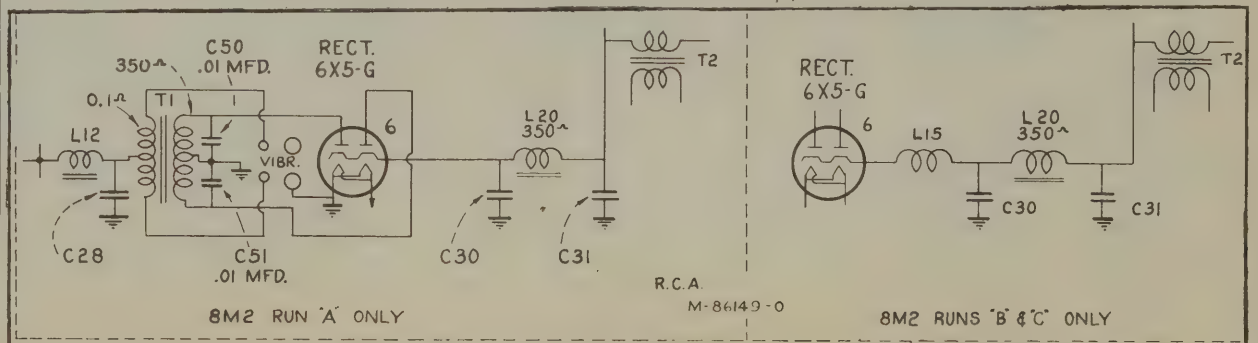



*Figure 5—Schematic Circuit Diagram of Power Unit Modifications (Model 8M2)*

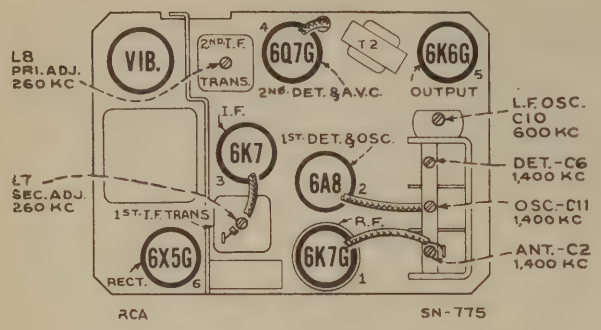



*Figure 8—Radiotron and Trimmer Locations (Models 8M1 and 8M2)*

## Service Data

**Antenna Compensating Capacitor.**—Trimmer C2 is accessible by removing the plug button from the front cover of the receiver case.

This trimmer must be adjusted for maximum signal output on a weak station near 1,400 kc after installation and with the antenna properly connected.

**Dial Pointer Adjustment.**—With receiver and control unit properly installed in car, rotate tuning knob to its extreme clockwise position and then to its extreme counter-clockwise position, irrespective of location of pointer on dial. Pull out dial lamp socket from control unit, locate the pointer adjusting screw at bottom of hole and turn with a small screwdriver until the pointer on dial is at the end calibration mark beyond "55" on the dial scale. Final adjustment may be made, if desired, by tuning in a station of known frequency and adjusting dial pointer to the frequency of the station.

**Power Switch and Volume Control Adjustment.**—Rotate the "Off-On-Volume" control knob to its extreme clockwise position and then back to its extreme counter-clockwise position. This sets the friction-clutch mechanism in proper alignment.

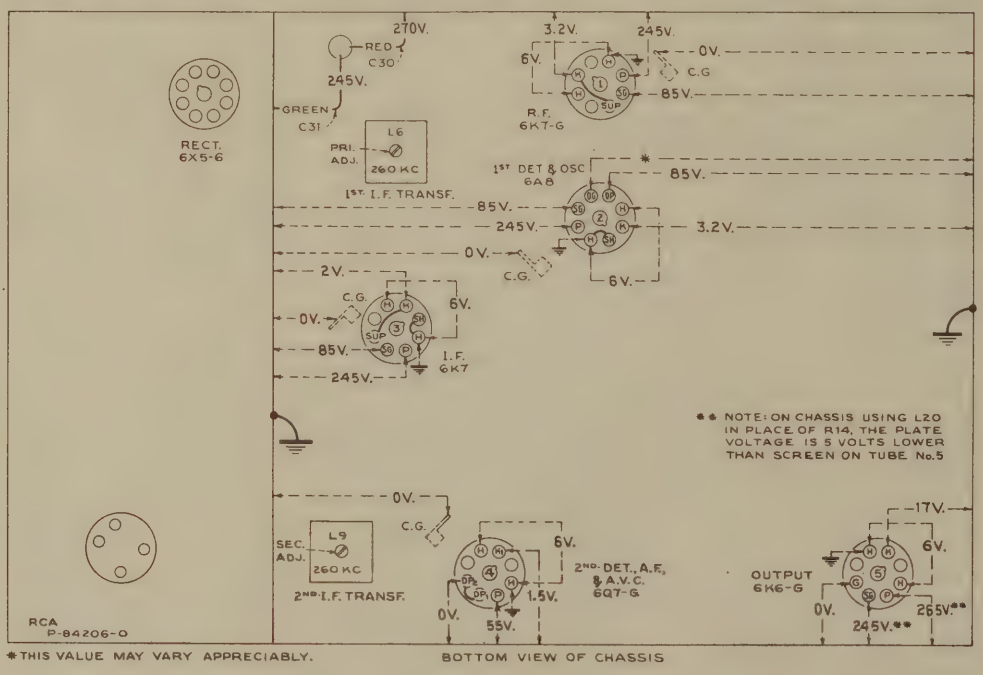



*Figure 9—Radiotron Socket Voltages and Trimmer Locations (Models 8M1 and 8M2)*
(Measured at 6.3 volts battery supply—Volume control minimum—No signal input)

To duplicate the conditions under which the above voltages were measured requires a 1,000-ohm-per-volt d-c meter having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the indicated voltage value. Each value should hold within ±20% when the receiver is normally operative at its rated battery voltage.

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

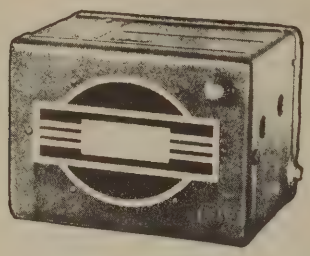
| Stock No. | DESCRIPTION | Stock No. | DESCRIPTION |
|---|---|---|---|
| | **RECEIVER ASSEMBLIES** | 14393 | Capacitor—.01 Mfd. (C21) |
| 13543 | Bracket—Chassis mounting bottom bracket and studs assembly | 4858 | Capacitor—.01 Mfd. (C22, C23) |
| 11978 | Capacitor—Adjustable trimmer (C10) | 4870 | Capacitor—.025 Mfd. (C4) |
| 30802 | Capacitor—22 Mmfd. (C36) | 5196 | Capacitor—.035 Mfd. (C34)—Model 8M2 only |
| 14262 | Capacitor—109 Mmfd. (C13, C14) | 4886 | Capacitor—.05 Mfd. (C5, C8) |
| * 12404 | Capacitor—120 Mmfd. (C17, C18) | 4830 | Capacitor—0.1 Mfd. (C15) |
| 12952 | Capacitor—330 Mmfd. (C32, C33)—Model 8M2 only | 30797 | Capacitor Pack—Comprising two sections each 8 Mfd. (C30, C31) |
| * 13894 | Capacitor—390 Mmfd. (C19) | 30793 | Coil—Antenna coil and shield (L1) |
| 14498 | Capacitor—680 Mmfd. (C1) | 30792 | Coil—Oscillator coil—less shield (L4, L5) |
| 30800 | Capacitor—1,000 Mmfd. (C27) | 30794 | Coil—R.F. coil—less shield (L2, L3) |
| 4838 | Capacitor—.005 Mfd. (C24) | 30790 | Condenser—3-gang variable tuning condenser (C2, C3, C6, C7, C11, C12) |
| 5148 | Capacitor—.007 Mfd. (C35)—Model 8M2 only | 12006 | Core—Adjustable core and stud for I.F. transformers |
| * 30626 | Capacitor—.0075 Mfd. (C16) | | |

# REPLACEMENT PARTS (Continued)

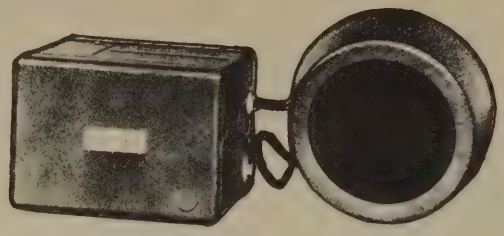
| Stock No. | DESCRIPTION |
|---|---|
| 12882 | Core—Adjustable core and stud for antenna coil |
| 30798 | Coupling—Tuning condenser flexible shaft insulating coupling |
| 13691 | Filter—Antenna filter (L14) |
| 30791 | Gear—Large gear located on shaft of tuning condenser |
| 13694 | Guide—Volume control flexible shaft guide |
| 30801 | Pin—Contact pin for tone control lead |
| 14561 | Resistor—220 ohms, insulated, ½ watt (R2, R5) —(R5 in Model 8M2 only) |
| 30538 | Resistor—330 ohms, insulated, ½ watt (R5)—Model 8M1 only |
| 5164 | Resistor—560 ohms, carbon type ½ watt (R13) |
| * 6134 | Resistor—1,200 ohms, carbon type, 1 watt (R14) |
| 30146 | Resistor—4,700 ohms, insulated, ½ watt (R8) |
| * 12695 | Resistor—15,000 ohms, insulated, ½ watt (R15) |
| 11671 | Resistor—18,000 ohms, carbon type, 2 watt (R6) |
| * 12454 | Resistor—33,000 ohms, insulated, ½ watt (R17) —Model 8M2 only |
| 12412 | Resistor—47,000 ohms, insulated, ½ watt (R18) —Model 8M2 only |
| 12286 | Resistor—56,000 ohms, insulated, ½ watt (R4) |
| 11281 | Resistor—100,000 ohms, insulated, 1/10 watt (R1) |
| 12285 | Resistor—470,000 ohms, insulated, ½ watt (R11, R12) |
| 13730 | Resistor—1 Meg., insulated, ½ watt (R10) |
| 12201 | Resistor—1.5 Meg., insulated, ½ watt (R7) |
| 3584 | Ring—Retaining ring for R.F. coil shield |
| 5129 | Ring—Retaining ring for Radiotron shield |
| 13472 | Ring—Retaining ring for oscillator coil shield |
| 13471 | Ring—Retaining ring for antenna coil shield |
| 12218 | Shield—Radiotron shield |
| 13686 | Socket—4-contact vibrator socket |
| 11196 | Socket—8-contact Radiotron socket |
| 12007 | Spring—Retaining spring for core Stock Nos. 12882 or 12006 |
| 30796 | Transformer—First I-F transformer (L6, L7, C13, C14) |
| * 30483 | Transformer—Second I-F transformer (L8, L9, C17, C18) (this unit stamped 84096-4) |
| 30795 | Transformer—Output transformer (T2) |
| * 30799 | Transformer—Vibrator power transformer (T1, L12, C28) |
| 13688 | Vibrator—Plug-in vibrator |
| 13420 | Volume Control—Model 8M1 only (R9) |
| 12365 | Volume Control—Model 8M2 only (R9) |
| | **REPRODUCER ASSEMBLIES (84173-4) Model 8M1** |
| 30804 | Cone—Reproducer cone and voice coil (L13) |
| 30803 | Reproducer—Complete (L11, L13) |
| | **REPRODUCER ASSEMBLIES (84189-2) Model 8M2** |
| 30806 | Cable—3-conductor shielded speaker cable complete with male plug |
| 30808 | Cone—Reproducer cone and voice coil (L13) |
| 30805 | Housing—Reproducer housing complete, less speaker unit and cable |
| 30807 | Reproducer—Speaker unit only—less case, cable, and mounting parts (L11, L13) |
| | **CONTROL BOX ASSEMBLIES Models 8M1 and 8M2** |
| 30817 | Cord—Dial drive cord—25 ft. length only |
| 30820 | Cover—Cover shell and spring used on control shafts, beneath knobs |
| 30818 | Dial—Round etched glass dial |
| 30813 | Dial Unit—Comprising round dial, escutcheon, pointer disc, spring barrel, and cord assembled —less dial lamp and dial lamp socket |
| 30819 | Indicator—Indicator pointer disc |
| 11765 | Lamp—Dial lamp |
| 30816 | Socket—Dial lamp socket and lead |
| 30814 | Tuning Unit—Comprising knob shaft, bearing, and gear case—less knob |
| 30815 | Volume Unit—Comprising knob shaft, bearing, and on-off switch—less knob |
| | Note—Knobs, escutcheon, and mounting parts are included in kits to be supplied by dealer for particular car in which installation is to be made. |
| | **MISCELLANEOUS ASSEMBLIES** |
| 4293 | Capacitor—Ammeter capacitor |
| 5025 | Capacitor—Generator capacitor |
| 13109 | Capacitor—0.5 Mfd. (C26) |
| 5023 | Fuse—15 ampere |
| 30809 | Housing—Receiver case—less speaker screen—Model 8M1 only |
| 30810 | Housing—Receiver case—Model 8M2 only |
| 4290 | Insulator—Fuse holder insulating sleeve |
| 30642 | Knob—Tone control knob—Model 8M2 only |
| 7766 | Lead—"A" lead—ammeter end—complete with female section of fuse holder |
| 12445 | Lead—"A" lead—chassis end—complete with male section of connector |
| 13708 | Lead—Antenna lead-in, approx. 36 in. long complete with 2 male sections of connector |
| 30811 | Shaft—Flexible shaft for tuning control—approx. 25½ in. long |
| 13926 | Shaft—Flexible shaft for volume control—approx. 25½ in. long |
| 12502 | Socket—Pin-socket and bracket assembly for tone control lead—Model 8M2 only |
| 12248 | Socket—3-contact socket and bracket for speaker cable—Model 8M2 only |
| 12254 | Stud—Speaker mounting stud assembly for Model 8M2 |
| 12448 | Stud—Receiver mounting stud, washer and nut assembly |
| 5024 | Suppressor—Distributor suppressor |
| 12249 | Tone control—Model 8M2 only |
| | *** MISCELLANEOUS SUBSTITUTE PARTS** |
| | **NOTE No. 1—MODEL 8M1 (Run "A")** |
| | A portion of these receivers were constructed with a second i-f transformer different from that listed above. Such receivers may be identified by letter "A" preceding the code stamped on the chassis partition (e. g. "A7M20" etc.) and also by reference to figure 3. For replacements in such receivers, do not use i-f transformer Stock No. 30483 or capacitor (C17 and C18) Stock No. 12404 listed above. Instead use: |
| 30407 | Capacitor—115 Mmfd. (C17 and C18) |
| 13693 | Transformer—Second I-F transformer (L8, L9, C17, C18) (this unit stamped 72970-1) |
| | **NOTE No. 2—MODEL 8M2 (Run "A")** |
| | A portion of these receivers were constructed with a vibrator transformer different from that listed above. Such receivers may be identified by letter "A" preceding the code stamped on the chassis partition (e. g. "A7M20" etc.) and also by presence of two additional and separate choke coils (L12 and L20). Refer to figures 5 and 6. For replacements in such receivers, do not use vibrator transformer Stock No. 30799; capacitor (C16) Stock No. 30626; resistor (R14) Stock No. 6134; or resistor (R15) Stock No. 12695. Instead use: |
| 13695 | Capacitor—2 sections, each .01 Mfd. (C50, C51) |
| 5019 | Capacitor—0.5 Mfd. (C28) |
| 30255 | Coil—"A" filter choke coil (L12) |
| 13696 | Coil—"B" choke coil (L20) |
| 13690 | Transformer—Vibrator power transformer (T1) |
| | **NOTE No. 3—MODEL 8M2 (Run "B")** |
| | A portion of these receivers were constructed with a second i.f. transformer different from that listed above, and the substitution of a "B" choke coil in place of resistor (R14). Such receivers may be identified by letter "B" preceding the code stamped on the chassis partition (e. g. "B7M20" etc.) and by the presence of an iron core "B" choke coil (L20) in the power unit section. Refer to figures 4 and 5. For replacements in such receivers, do not use resistor (R14) Stock No. 6134; i-f transformer Stock No. 30483; capacitor (C17, C18) Stock No. 12404; resistor (R17) Stock No. 12454; or capacitor (C19) Stock No. 13894. Instead use: |
| 30407 | Capacitor—115 Mmfd. (C17, C18) |
| 12761 | Capacitor—265 Mmfd. (C19) |
| 13696 | Coil—"B" choke coil (L20) |
| 5132 | Resistor—47,000 ohms, carbon type, 1/10 watt (R17) |
| 12229 | Transformer—Second I-F transformer (L8, L9, C17, C18, C19, R17) (this unit stamped 72652-2) |
| | **NOTE No. 4—MODEL 8M2 (Run "C")** |
| | A portion of these receivers were constructed with an iron core "B" choke coil (L20) instead of resistor (R14). Such receivers may be identified by letter "C" preceding the code stamped on the chassis partition (e. g. "C7M20" etc.). Refer to figure 5. For replacements in such receivers, do not use resistor (R14) Stock No. 6134. Instead use: |
| 13696 | Coil—"B" choke coil (L20) |

# MODELS 8M3 and 8M4

## Six-Tube, Superheterodyne Automobile Receivers



*Model 8M3*



*Model 8M4*

## Electrical Specifications

RADIOTRON COMPLEMENT

(1) RCA-6K7-G..... R-F Amplifier
(2) RCA-6A8 ..... First Detector—Oscillator
(3) RCA-6K7..... I-F Amplifier
(4) RCA-6R7-G.....Second Det., A-F Amp., and A.V.C.
(5) RCA-6J5..... Audio Driver
(6) RCA-6N7-G..... Push-Pull Power Output

TUNING RANGE..... 550 to 1,550 kc

POWER OUTPUT RATINGS

Maximum..... 9 watts
Undistorted..... 6 watts

POWER SUPPLY RATING

Supply Voltage ..... 6.3 volts
Current Drain..... 7.5 amperes
Fuse Protection..... 15 ampere

PILOT LAMP..... Mazda No. 51, 7.5 volts, 0.2 ampere

LOUDSPEAKER

Type..... Electrodynamic
Voice-Coil Impedance..... 3 ohms at 400 cycles

**Power Switch and Volume Control Adjustment.**—Rotate the "Off-On-Volume" control knob to its extreme clockwise position and then back to its extreme counter-clockwise position. This sets the friction-clutch mechanism in proper alignment.

**Dial Pointer Adjustment.**—With receiver and control unit properly installed in car, rotate "Tuning" knob to its extreme clockwise position and then to its extreme counter-clockwise position, irrespective of location of pointer on dial. Pull out dial-lamp socket from control unit, locate the pointer adjusting screw at bottom of hole and turn with a small screwdriver until the pointer on dial is at the end calibration mark beyond "55" on the dial scale. Final adjustment may be made, if desired, by tuning in a station of known frequency and adjusting dial pointer to the frequency of the station.

## Alignment Procedure

**Antenna Compensating Capacitor.**—Trimmer C3 is accessible by removing the plug button from the front cover of the receiver case. This trimmer must be adjusted for maximum signal output on a weak station around 1,400 kc after installation and with the antenna properly connected.

Cathode-ray alignment is preferable; the connections to the chassis are shown on figures 2 and 4. If an output indicator is used, connect it across the loudspeaker voice-coil and advance the receiver volume control to full-volume position.

On Model 8M4, the sensitivity control should be placed in its clockwise (maximum sensitivity) position.

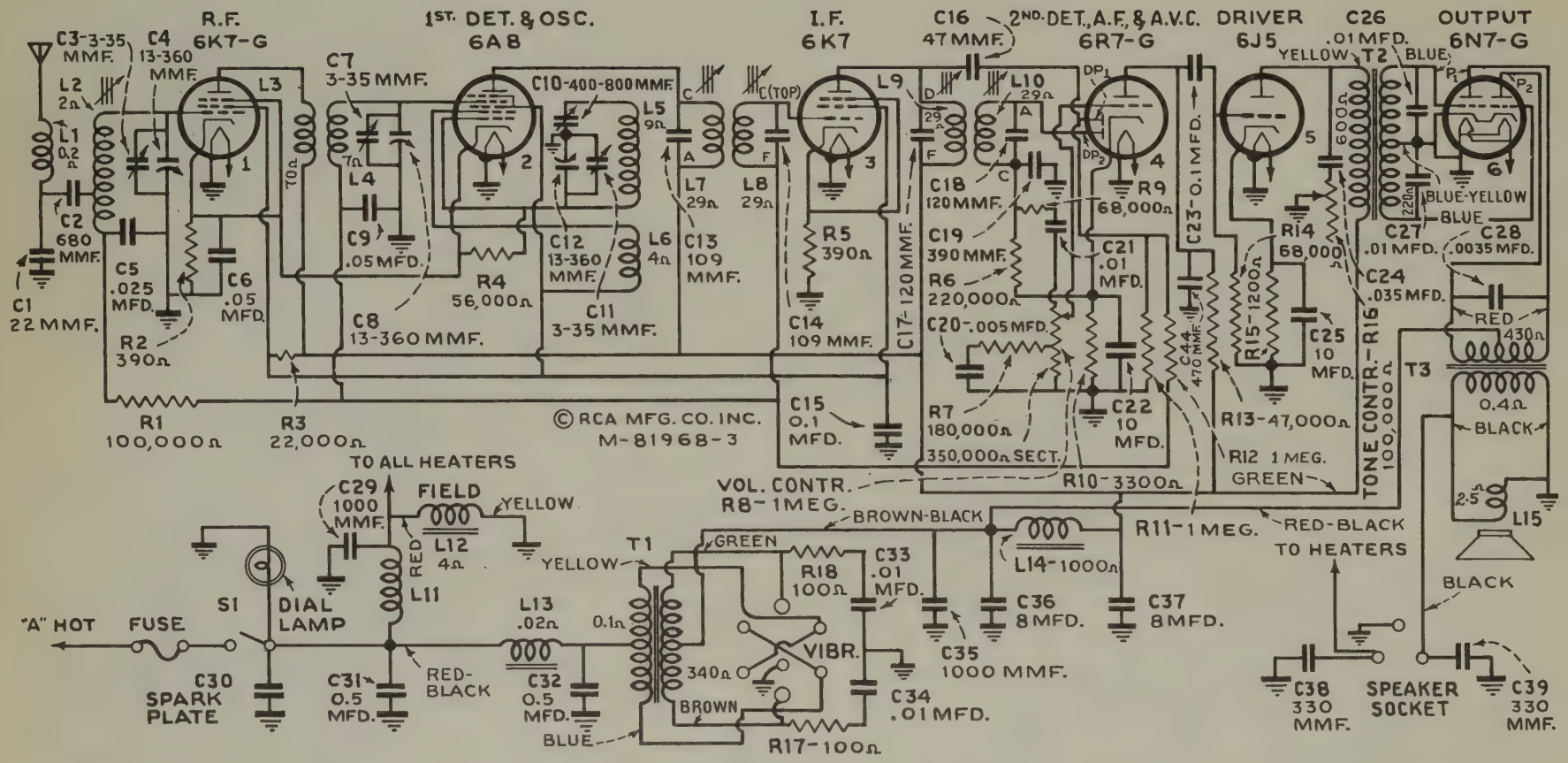
Connect the "low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Ant. Conn." means that the test-oscillator signal should be applied to the receiver at the antenna connector on side of case. "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal is received from a station or the local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

| Order of Alignment | Test Oscillator | | | Receiver Dial Setting | Circuit to Adjust | Adjustment Symbols | Adjust to Obtain |
|---|---|---|---|---|---|---|---|
| | Connection to Receiver | Dummy Antenna | Frequency Setting | | | | |
| 1 | 6K7 I-F Grid Cap | .001 Mfd. | 260 kc | No Signal 550-750 kc | 2nd I-F Trans. | L9 and L10 | Max. (peak) |
| 2 | 6A8 Det. Grid Cap | .001 Mfd. | 260 kc | No Signal 550-750 kc | 1st I-F Trans. | L7 and L8 | Max. (peak) |
| 3 | Ant. Conn. | 150 Mmfd. | 600 kc | 600 kc | L-F Osc. | C10 | Max. (peak) |
| 4 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | H-F Osc. | C11 | Max. (peak) |
| 5 | Ant. Conn. | 150 Mmfd. | 600 kc | Rock Thru 600 kc | L-F Osc. | C10 | Max. (peak) |
| 6 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | H-F Osc. | C11 | Max. (peak) |
| 7 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | Det. | C7 | Max. (peak) |
| 8 | Ant. Conn. | 150 Mmfd. | 1,400 kc | 1,400 kc | Ant. | C3* | Max. (peak) |

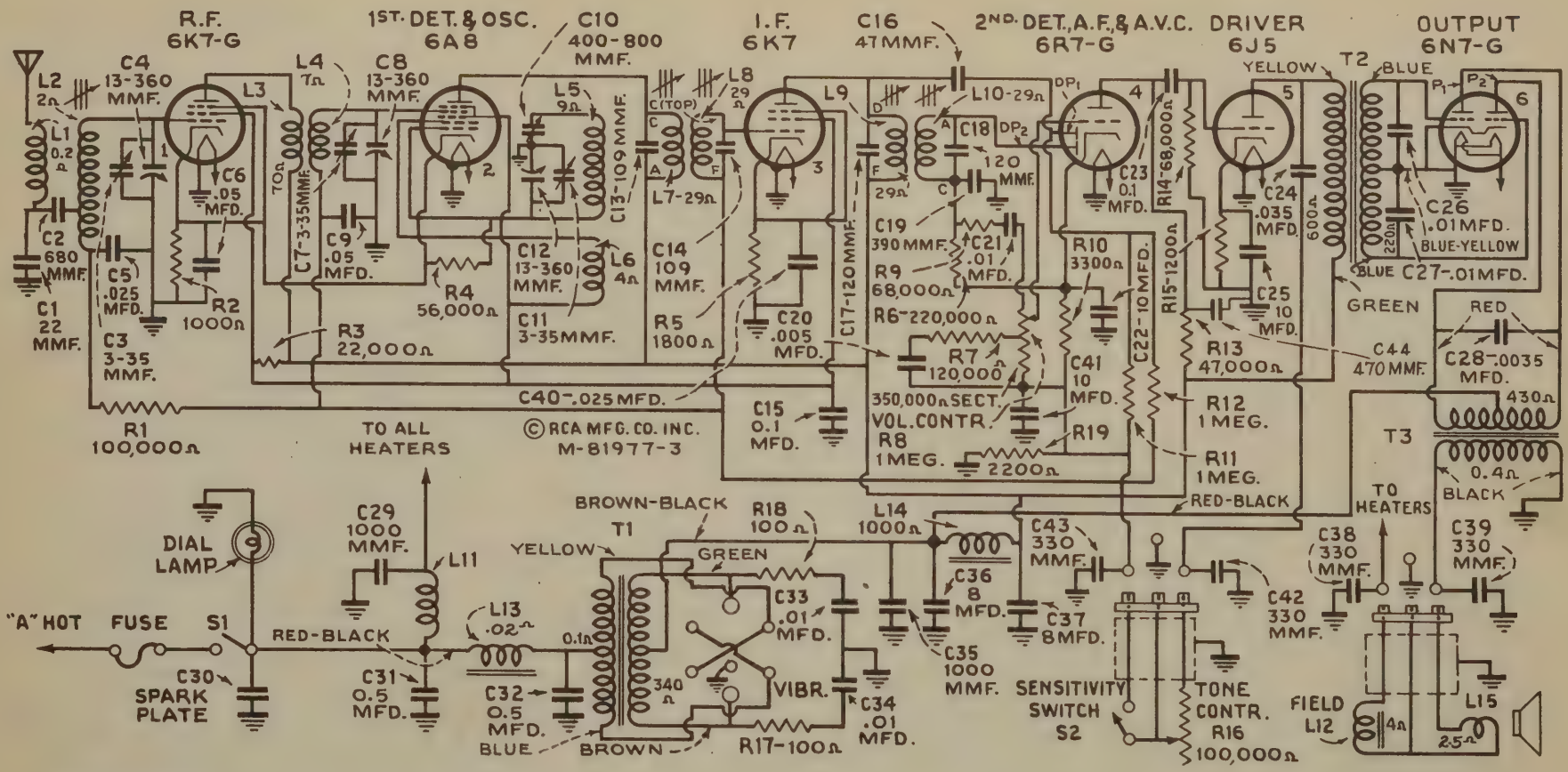
* Re-adjust C3 after installation as outlined under "Antenna Compensating Capacitor."




*–Schematic Circuit Diagram (Model 8M3)*

**Inoperative or Intermittent:**

The plating on the adjustment screws of the antenna trimmer C-3 may become chipped, and will cause the trimmer to be short-circuited. In order to correct this condition, remove the screw entirely, see that the metallic chips are cleaned from the trimmer plates, and clean the burrs from the threads of the screw. Replace the screw and re-adjust the trimmer at 1,400 kc as directed in the 8M3 Service Note.




*—Schematic Circuit Diagram (Model 8M4)*

**Vibrator Interference:**

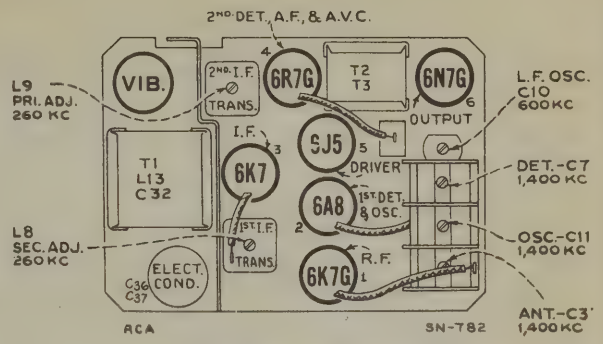
Noise or hum interference may develop when the Local-Distance switch is operated on the local position, if there are poor grounds at the car battery or insecure contact between various members of the car chassis. The interference can be eliminated by installing a 500 ohm resistor, preferably a flexible pigtail type, in series with the BLACK lead to the Local-Distance switch on the control head assembly.

### Noise Filter Change:

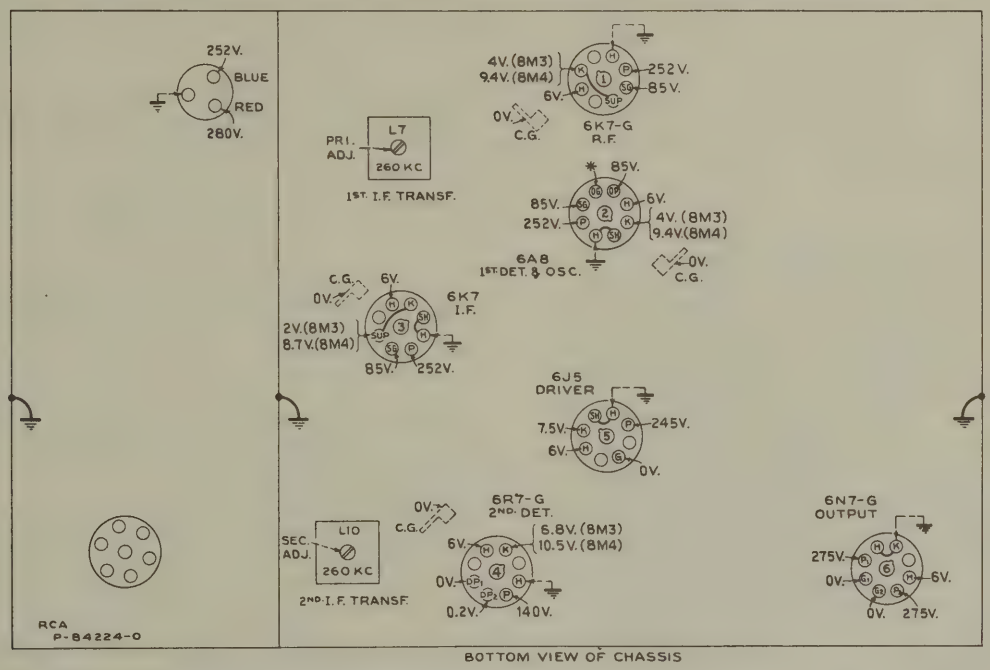
It is occasionally advantageous on the automotive receivers 8M3 and 8M4 to have the 22 mmfd. antenna shunt capacitor C-1 connected between the output end of the antenna filter coil L-1, instead of between the antenna end and chassis. Later production sets incorporate this change. It is to be noted also on these same instruments, that secure electrical contact is required between the vibrator transformer and the chassis in order to minimize internal noise induction.

### High-Capacity Auto Antennas:

On a number of cars having built-in antennas of relatively high capacitance it is frequently difficult to obtain best signal-to-noise ratio, due to improper matching of the antenna system to the input. This is particularly true where the insulated steel top insert, running board, or rear trunk is employed as antenna. Improved performance can be obtained by changing the value of the antenna series capacitor from 680 mmfd. to a value 300-400 mmfd. Correct matching is indicated by ability to reach a definite peak adjustment on the "Antenna Compensating Capacitor."




*—Radiotron and Trimmer Locations (Models 8M3 and 8M4)*




*—Radiotron Socket Voltages and Trimmer Locations (Models 8M3 and 8M4)*

(Measured at 6.3 volts battery supply—Volume control minimum—No signal input—Sensitivity control (Model 8M4) clockwise)

To duplicate the conditions under which the above voltages were measured requires a 1,000-ohm-per-volt d-c meter having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the indicated voltage value. Each value should hold within ±20% when the receiver is normally operative at its rated battery voltage.

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | RECEIVER ASSEMBLIES | | 30800 | Capacitor—1,000 Mmfd. (C29, C35) | |
| | | | 30303 | Capacitor—.0035 Mfd. (C28) | |
| 13789 | Bracket—Chassis mounting bracket and stud assembly—Model 8M4 only | | 4838 | Capacitor—.005 Mfd. (C20) | |
| | | | 4858 | Capacitor—.01 Mfd. (C21, C26, C27) | |
| 13543 | Bracket—Chassis mounting bracket and stud assembly—Model 8M3 only | | 13695 | Capacitor—Two sections each .01 Mfd. (C33, C34) | |
| 30802 | Capacitor—22 Mmfd. (C1) | | 4870 | Capacitor—.025 Mfd. (C5, C40)—(C40 in Model 8M4 only) | |
| 13141 | Capacitor—47 Mmfd. (C16) | | | | |
| 14262 | Capacitor—109 Mmfd. (C13, C14) | | 5196 | Capacitor—.035 Mfd. (C24) | |
| 12404 | Capacitor—120 Mmfd. (C17, C18) | | 4886 | Capacitor—.05 Mfd. (C6, C9) | |
| 30832 | Capacitor—330 Mmfd. (C38, C39, C42, C43)—(C42, C43 in Model 8M4 only) | | 4839 | Capacitor—0.1 Mfd. (C15, C23) | |
| | | | 30828 | Capacitor—Two sections each 8 Mfd. (C36, C37) | |
| 13894 | Capacitor—390 Mmfd. (C19) | | 14902 | Capacitor—Comprising two sections, each 10 Mfd. (C22, C25) Model 8M3 only | |
| 11978 | Capacitor—Adjustable—400-800 Mmfd. (C10) | | | | |
| 30433 | Capacitor—470 Mmfd. (C44) | | 30829 | Capacitor—Comprising three sections, each 10 Mfd. (C22, C25, C41) Model 8M4 only | |
| 14498 | Capacitor—680 Mmfd. (C2) | | | | |

# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 30793 | Coil—Antenna coil and shield (L2) |
| 30792 | Coil—Oscillator coil—less shield (L5, L6) |
| 30794 | Coil—R.F. coil—less shield (L3, L4) |
| 30823 | Condenser—3-gang variable tuning condenser (C3, C4, C7, C8, C11, C12) |
| 12882 | Core—Adjustable core and stud for antenna coil |
| 12006 | Core—Adjustable core and stud for I.F. transformer |
| 13996 | Coupling—Insulated coupling for tuning condenser shaft |
| 13691 | Filter—Antenna filter (L1) |
| 30824 | Gear—Large gear for condenser rotor shaft |
| 30825 | Gear—Small worm gear for condenser |
| 13694 | Guide—Volume control shaft guide |
| 13111 | Reactor—Filter reactor (L14) |
| 30540 | Resistor—100 ohms, insulated, ½ watt (R17, R18) |
| 12261 | Resistor—390 ohms, insulated, ¼ watt (R2, R5) —Model 8M3 only |
| 14720 | Resistor—1,000 ohms, insulated, ½ watt (R2)—Model 8M4 only |
| 12267 | Resistor—1,200 ohms, insulated, ½ watt (R15) |
| 12194 | Resistor—1,800 ohms, insulated, ½ watt (R5) —Model 8M4 only |
| 13716 | Resistor—2,200 ohms, insulated, ½ watt (R19) —Model 8M4 only |
| 12312 | Resistor—3,300 ohms, insulated, ½ watt (R10) |
| 13669 | Resistor—22,000 ohms, carbon type, 2 watt (R3) |
| 11646 | Resistor—47,000 ohms, insulated, ½ watt (R13) |
| 12286 | Resistor—56,000 ohms, insulated, ½ watt (R4) |
| 13715 | Resistor—68,000 ohms, insulated, ½ watt (R9, R14) |
| 11281 | Resistor—100,000 ohms, carbon type, 1/10 watt (R1) |
| 13734 | Resistor—120,000 ohms, insulated, ½ watt (R7) —Model 8M4 only |
| 13698 | Resistor—180,000 ohms, insulated, ½ watt (R7) —Model 8M3 only |
| 12264 | Resistor—220,000 ohms, insulated, ½ watt (R6) |
| 13730 | Resistor—1 meg., insulated, ½ watt (R11, R12) |
| 3584 | Ring—Retaining ring for R.F. coil shield |
| 13472 | Ring—Retaining ring for oscillator coil shield |
| 13471 | Ring—Retaining ring for antenna coil shield |
| 5129 | Ring—Tube-shield ring |
| 3623 | Shield—R.F. or oscillator coil shield |
| 14491 | Shield—Antenna coil shield |
| 12008 | Shield—I.F. transformer shield can |
| 12218 | Shield—Tube shield and ring |
| 11196 | Socket—Radiotron socket |
| 12241 | Socket—Vibrator socket |
| 12007 | Spring—Retaining spring for core, Stock Nos. 12882 and 12006 |
| 30796 | Transformer—First I.F. transformer (L7, L8, C13, C14) |
| 30483 | Transformer—Second I.F. transformer (L9, L10, C17, C18) |
| 12230 | Transformer—Audio transformer (T2, T3) |
| 30827 | Transformer—Vibrator power transformer (T1, L13, C32) |
| 12236 | Vibrator |
| 13711 | Volume Control (R8) |
| | **REPRODUCER ASSEMBLIES (72684-1)** Model 8M3 |
| 12482 | Board—Reproducer terminal board |
| 12450 | Coil—Field coil (L12) |
| 12451 | Cone—Reproducer cone complete (L15) |
| 9687 | Reproducer—Complete |
| | **REPRODUCER ASSEMBLIES** Model 8M4 |
| 13794 | Cable—3-conductor shielded reproducer cable, approx. 18-in. long, complete with 3-contact male connector |
| 13795 | Coil—Reproducer field coil (L12) for speaker marked 72947-1 |
| 13796 | Cone—Reproducer cone and dust cap (L15) for speaker marked 72947-1 |
| 30834 | Cone—Reproducer cone and dust cap for speaker marked 72947-22 (L15) |
| 11984 | Connector—3-contact male connector for reproducer cable |

| STOCK No. | DESCRIPTION |
|---|---|
| 30833 | Housing—Reproducer housing complete — less speaker unit and cable |
| 9774 | Reproducer—Speaker unit only—less case, cable, and mounting parts |
| 13797 | Screw—Reproducer housing screw |
| | **CONTROL BOX ASSEMBLIES** Model 8M3 |
| 30817 | Cord—Dial drive cord—25 ft. length only |
| 30820 | Cover—Cover shell and spring used on control shafts, beneath knobs |
| 30818 | Dial—Round etched glass dial |
| 30813 | Dial Unit—Comprising round dial, escutcheon, pointer disc, spring barrel, and cord assembled —less dial lamp and dial lamp socket |
| 30819 | Indicator—Indicator pointer disc |
| 11765 | Lamp—Dial lamp |
| 30816 | Socket—Dial lamp socket and lead |
| 30814 | Tuning Unit—Comprising knob shaft, bearing, and gear case—less knob |
| 30815 | Volume Unit—Comprising knob shaft, bearing, and on-off switch—less knob |
| | **CONTROL BOX ASSEMBLIES** Model 8M4 |
| 13792 | Cable—3-conductor shielded tone and sensitivity cable complete with 4-prong plug |
| 30817 | Cord—Dial drive cord—25 ft. length only |
| 30818 | Dial—Round etched glass dial |
| 30813 | Dial Unit—Comprising round dial, escutcheon, pointer disc, spring barrel and cord assembled —less dial lamp and dial lamp socket |
| 30819 | Indicator—Indicator pointer disc |
| 30837 | Knob—Wing knob |
| 11765 | Lamp—Dial lamp |
| 30816 | Socket—Dial lamp socket and lead |
| 30835 | Tuning Unit—Comprising knob shafts, bearing, gear case and sensitivity switch—less knobs |
| 30836 | Volume Unit—Comprising knob shafts, bearing, tone control and on-off switch—less knobs |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30839 | Case—Receiver case complete—less speaker grille —Model 8M3 only |
| 30840 | Case—Receiver case complete—Model 8M4 only |
| 13109 | Capacitor—0.5 Mfd. (C31) |
| 4293 | Capacitor—Ammeter capacitor |
| 5025 | Capacitor—Generator capacitor |
| 5023 | Fuse—15 ampere |
| 30838 | Grille—Speaker grille and cloth—Model 8M3 only |
| 4290 | Insulator—Fuse holder insulator |
| 30642 | Knob—Tone control knob—Model 8M3 only |
| 7766 | Lead—"A" lead (ammeter end) complete with clip |
| 12445 | Lead—"A" lead (set end) complete with male section of connector |
| 13806 | Ring—Soft rubber ring for speaker mounting—Model 8M4 only |
| 30811 | Shaft—Tuning control flexible shaft — approx. 25⅛-in. long |
| 13926 | Shaft—Volume control flexible shaft — approx. 25⅛-in. long |
| 12248 | Socket—Bracket and socket for speaker cable—Model 8M3 only |
| 12502 | Socket—Bracket and socket for tone control lead —Model 8M3 only |
| 13804 | Socket—Bracket and socket for speaker and control box cables—Model 8M4 only |
| 12254 | Stud—Speaker mounting stud, spacer, and washer assembly—Model 8M4 only |
| 12448 | Stud—Receiver mounting stud, washer, and nut assembly |
| 5024 | Suppressor—Distributor suppressor |
| 12249 | Tone Control—(R16)—Model 8M3 only |

# MODEL 8Q1

## Eight-Tube, Three-Band, Superheterodyne Receiver — Chassis No. RC-337

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)..530-1720 kc (566-174 m)
Medium Wave ("B" Band).....2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band).....7.0-22 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY ..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6K7..... R-F Amplifier
(2) RCA-6L7..... 1st-Detector
(3) RCA-6J7..... Oscillator
(4) RCA-6K7..... I-F Amplifier
(5) RCA-6Q7.....2nd-Det., A.V.C., and Audio
(6) RCA-6F6-G..... Power Output
(7) RCA-6U5..... Tuning Indicator
(8) RCA-5Y3-G.. (In PSU 8A, 8B, 8C AC power supply unit)..... Rectifier
(8) RCA-5W4 (In PSU 8E D-C power supply unit) ..... Rectifier

Pilot Lamps (2)..... Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

Undistorted..... 2.5 watts
Maximum..... 4.5 watts

LOUDSPEAKER (RL-63H-3)

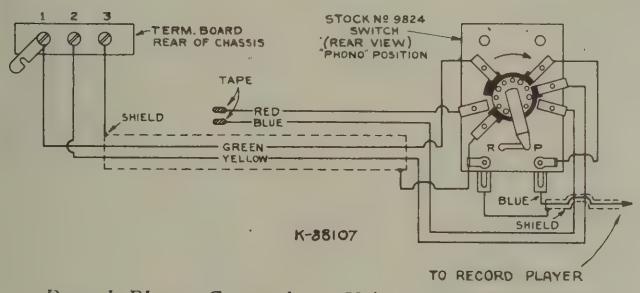
Type..... 8-inch Electrodynamic
Voice-coil Impedance at 400 ohms..... 2.2 ohms

POWER SUPPLY RATINGS

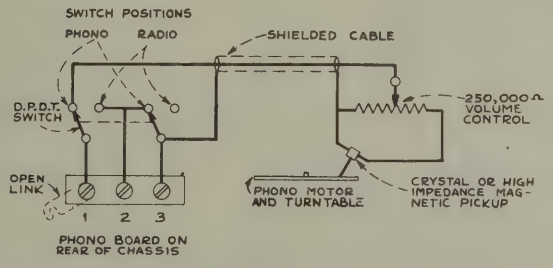
| A-C Ratings | Volts | Cycles |
|---|---|---|
| With PSU 8A Power Supply Unit | 105-125 | 50-60 |
| With PSU 8B Power Supply Unit | 105-125 | 25-60 |
| With PSU 8C Power Supply Unit | 105-130, 140-160, 200-225, 225-250 | 50-60 |

D-C Ratings

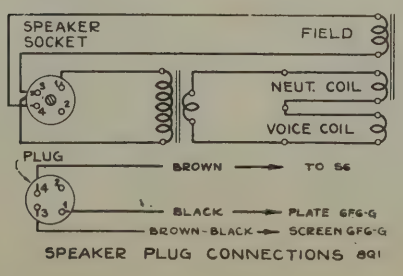
With PSU 8E Power Supply Unit.....105-125, 210-250 ..... D-C



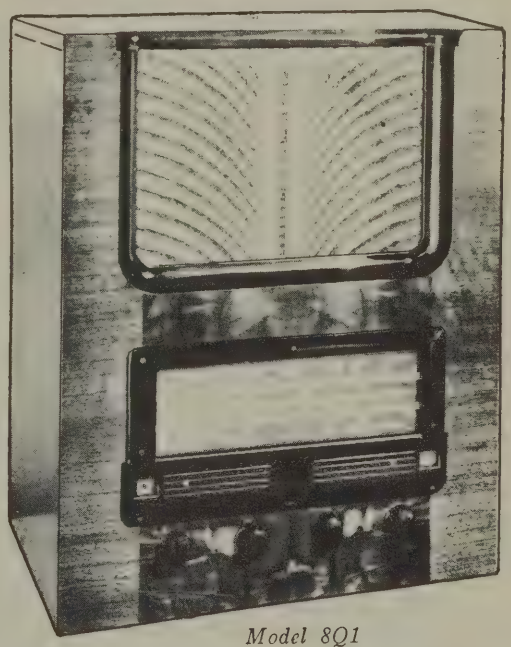

*Record Player Connections, Using a No. 9824 Switch*



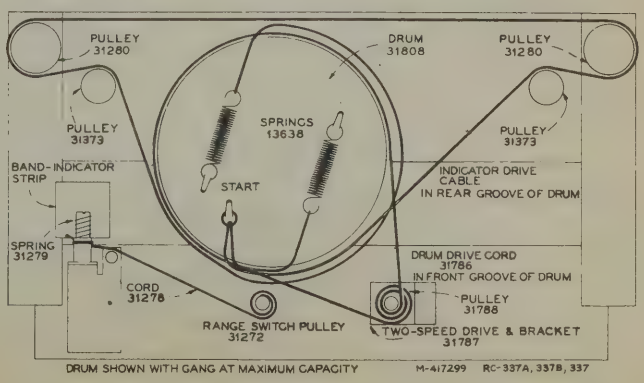

*Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch*



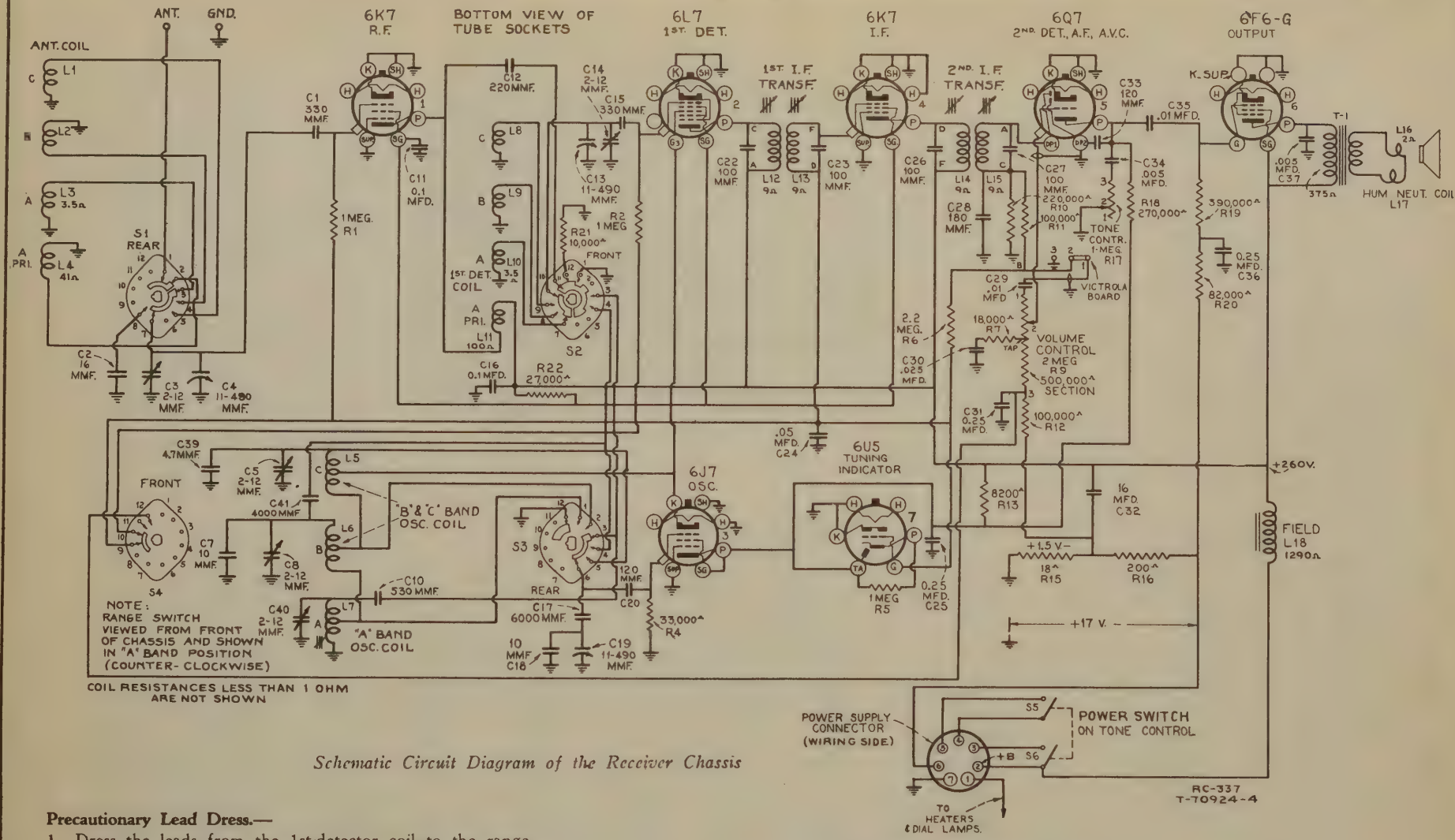

*Connections of Loudspeaker and Cable*



*Model 8Q1*




*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*




*Schematic Circuit Diagram of the Receiver Chassis*

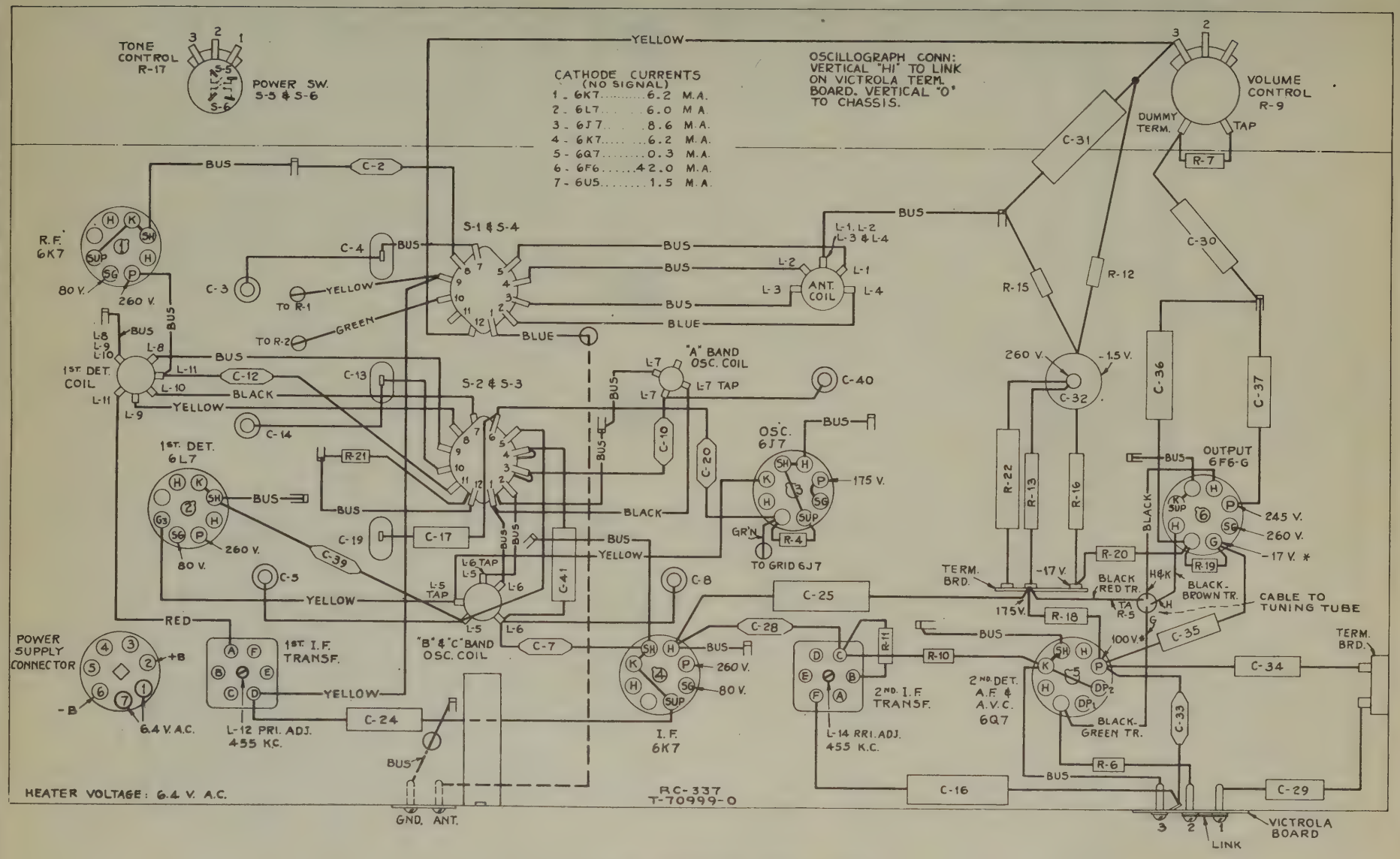
**Precautionary Lead Dress.—**

1. Dress the leads from the 1st-detector coil to the range switch away from the trimmer C14.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to the chassis.

## Power Supply Units

The receiver chassis has a seven-prong male connector for connection to the power supply unit. Both A-C and D-C power supply units are available, as listed under "Power Supply Ratings" in the electrical specifications.

**Schematic diagrams and replacement parts lists for the power supply units are printed in separate service data sheets, which should be referred to for further information.**




*R-F Wiring Diagram and Socket Voltages*

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

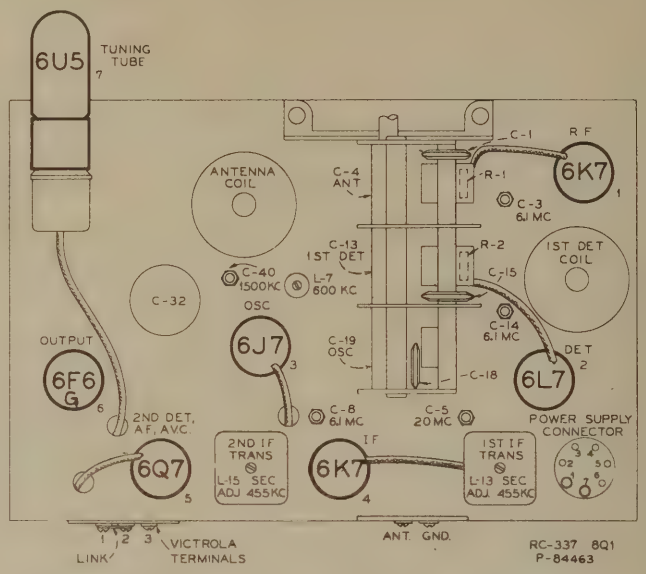
**Calibration Scale on Indicator-Drive-Cord drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

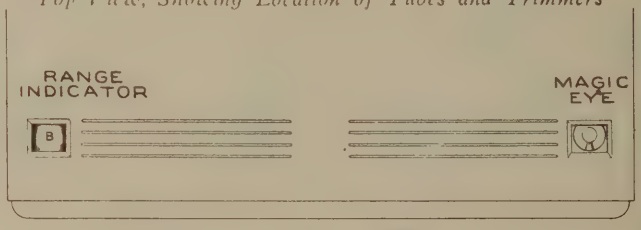
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end marked on the dial scales, and gang-condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."




*Top View, Showing Location of Tubes and Trimmers*




### At Right—*Location of Controls*

To turn on the set, turn the power-tone control fully clockwise, past the snap of the switch. This is the full-range tone position. To switch off the set, turn this knob fully counter-clockwise.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "C" band, Quiet Point. | L14 and L15 (2nd I-F Trans.) |
| 2 | 6L7 1st-Det. grid cap, in series with .01 mfd. | | | L12 and L13 (1st I-F Trans.) |
| 3 | Antenna Terminal, in series with 300 ohms | 6.1 mc | 6.1 mc (29°) "B" band | C8 (osc.)* C14 (det.)** C3 (ant.) |
| 3A | Check to determine that C8 has been adjusted to the correct peak by turning radio to 5.19 mc (50°) where a weaker signal should be received. | | | |
| 4 | Antenna Terminal, in series with 300 ohms | 20 mc | 20 mc (23.5°) "C" band | C5 (osc.)* |
| 4A | Check to determine that C5 has been adjusted to the correct peak by turning radio to 19.09 mc (29.5°) where a weaker signal should be received. | | | |
| 5 | Antenna Terminal, in series with 200 mmf. | 1,500 kc | 1,500 kc (31°) "A" band | C40 (osc.) |
| 6 | Antenna Terminal, in series with 200 mmf. | 600 kc | 600 kc (144.5°) "A" band | L7 (osc.)† |
| 7 | Repeat Step No. 5 | | | |

* Use **minimum** capacity peak (plunger out) if two peaks can be obtained.

** Rock gang condenser slightly while peaking C14, and use **maximum** capacity peak if two peaks can be obtained.

† Rock gang condenser slightly while peaking L7 for maximum output.

**NOTE:** The oscillator tracks 455 kc **above** the signal on all bands.

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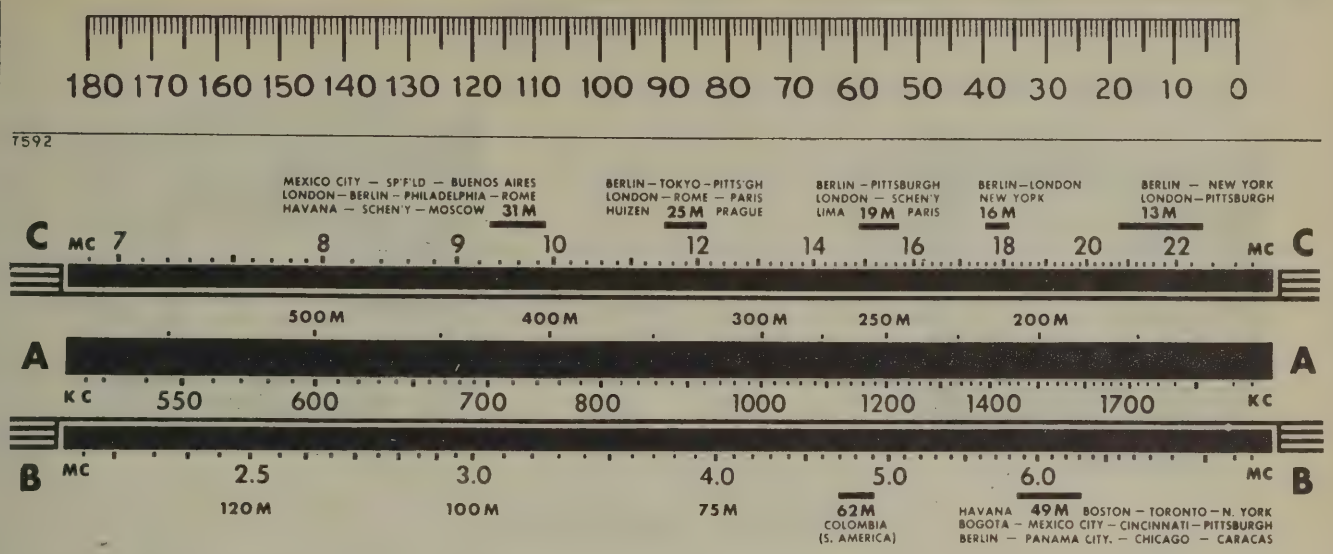
## Calibration Scale


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
7592
MEXICO CITY — SP'F'LD — BUENOS AIRES
LONDON — BERLIN — PHILADELPHIA — ROME
HAVANA — SCHEN'Y — MOSCOW
31M
BERLIN — TOKYO — PITTS'GH
LONDON — ROME — PARIS
HUIZEN 25M PRAGUE
BERLIN — PITTSBURGH
LONDON — SCHEN'Y
LIMA 19M PARIS
BERLIN — LONDON
NEW YORK
16M
BERLIN — NEW YORK
LONDON — PITTSBURGH
13M
C MC 7 8 9 10 12 14 16 18 20 22 MC C
500M 400M 300M 250M 200M
A
KC 550 600 700 800 1000 1200 1400 1700 KC
A
B MC 2.5 3.0 4.0 5.0 6.0 MC B
120M 100M 75M
62M COLOMBIA (S. AMERICA)
HAVANA 49M BOSTON — TORONTO — N. YORK
BOGOTA — MEXICO CITY — CINCINNATI — PITTSBURGH
BERLIN — PANAMA CITY. — CHICAGO — CARACAS
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*

# REPLACEMENT PARTS

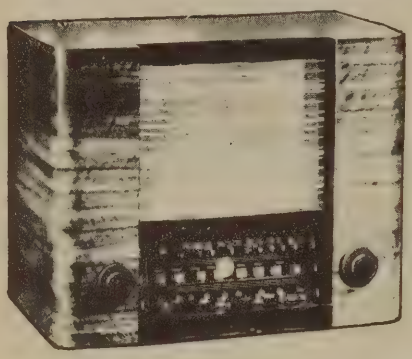
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES (RC337)** |
| 13216 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph input terminal board |
| 31303 | Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord |
| 31785 | Cable—Indicator pointer drive cable |
| 30766 | Cap—Rubber cap for Magic Eye |
| 12714 | Capacitor—Trimmer 2-12 mmfd. (C3, C5, C8, C14, C40) |
| 14392 | Capacitor—4.7 mmfd. (C39) |
| 13200 | Capacitor—10 mmfd. (C7, C18) |
| 31791 | Capacitor—16 mmfd. (C2) |
| 31270 | Capacitor—100 mmfd. (C22, C23, C26, C27) |
| 12724 | Capacitor—120 mmfd. (C20, C33) |
| 13003 | Capacitor—180 mmfd. (C28) |
| 12694 | Capacitor—220 mmfd. (C12) |
| 12952 | Capacitor—330 mmfd. (C1, C15) |
| 31790 | Capacitor—530 mmfd. (C10) |
| 31792 | Capacitor—4,000 mmfd. (C41) |
| 31405 | Capacitor—6,000 mmfd. (C17) |
| 4838 | Capacitor—.005 mfd. (C34, C37) |
| 14393 | Capacitor—.01 mfd. (C29, C35) |
| 4870 | Capacitor—.025 mfd. (C30) |
| 4886 | Capacitor—.05 mfd. (C24) |
| 4839 | Capacitor—0.1 mfd. (C11, C16) |
| 12484 | Capacitor—0.25 mfd. (C25, C31, C36) |
| 5212 | Capacitor—16 mfd. (C32) |
| 31818 | Clip—Magic Eye mounting clip |
| 31780 | Coil—Antenna coil (L1, L2, L3, L4) |
| 31782 | Coil—Oscillator coil—"A" band only (L7) |
| 31783 | Coil—Oscillator coil—"B" and "C" bands only (L5, L6) |
| 31781 | Coil—R-f coil (L8, L9, L10, L11) |
| 31774 | Condenser—3-gang variable tuning condenser (C4, C13, C19) |
| 31278 | Cord—Band indicator cord |
| 31786 | Cord—Variable condenser drive cord |
| 31787 | Drive—Two-speed drive and mounting bracket |
| 31808 | Drum—Variable condenser drive cord drum |
| 31304 | Indicator—Band indicator strip |
| 11891 | Lamp—Dial lamp |
| 31817 | Plate—Cushion socket mounting plate — less socket |
| 5040 | Plug—4-contact female plug for speaker cable |
| 14404 | Plug—7-contact male plug for power input |
| 31788 | Pulley—Two-speed drive pulley |
| 31280 | Pulley—Indicator pointer drive cord pulley (large) |
| 31373 | Pulley—Indicator pointer drive cord pulley (small) |
| 31272 | Pulley—Range switch pulley |
| 14660 | Resistor—18 ohms, ½ watt (R15) |
| 14526 | Resistor—200 ohms, wire wound, 2½ watt (R16) |
| 13204 | Resistor—8,200 ohms, 2 watt (R13) |
| 13302 | Resistor—10,000 ohms, 1/10 watt (R21) |
| 13045 | Resistor—18,000 ohms, ½ watt (R7) |
| 14167 | Resistor—27,000 ohms, 2 watt (R22) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R4) |
| 12719 | Resistor—82,000 ohms, 1/10 watt (R20) |
| 14560 | Resistor—100,000 ohms, ½ watt (R11, R12) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R10) |
| 12199 | Resistor—270,000 ohms, ½ watt (R18) |
| 13005 | Resistor—390,000 ohms, 1/10 watt (R19) |
| 12013 | Resistor—1 meg., 1/10 watt (R1, R2, R5) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R6) |
| 14887 | Retainer—Indicator drive cord pulley retainer |
| 4669 | Screw—No. 8-32 x ⅜-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808 |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31251 | Socket—Octal base tube socket |
| 31279 | Spring—Band indicator tension spring |
| 13638 | Spring—Tension spring for pointer drive cable, or variable condenser drive cord |
| 31775 | Switch—Range switch (S1, S2, S3, S4) |
| 31807 | Tone Control and power switch (R17, S5, S6) |
| 31267 | Transformer—First i-f transformer (L12, L13, C22, C23) |
| 31268 | Transformer—Second i-f transformer (L14, L15, C26, C27) |
| 31450 | Volume Control (R9) |
| | **SPEAKER ASSEMBLIES (RL63H-3)** |
| 31825 | Cap—Speaker cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L17) |
| 12012 | Coil—Speaker field coil (L18) |
| 31310 | Cone—Speaker cone and voice coil (L16) |
| 31302 | Plug—4-contact male plug for speaker |
| 31824 | Speaker complete |
| 14355 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31800 | Dial—Dial scale and crystal |
| 31831 | Escutcheon—Dial scale escutcheon — less dial scale and crystal |
| 31801 | Indicator—Indicator pointer and carriage |
| 31802 | Knob—Station selector, tone control, volume control or range switch knob |
| 31287 | Rod—Pointer carriage slide rod |
| 31306 | Screen—Dial color screen and light diffuser |
| 14270 | Spring—Retaining spring for knob Stock No. 31802 |
| 31558 | Spring—Stop spring for pointer slide rod |

# MODELS 8Q2, 8QU5C and 8QU5M

**Chassis No. RC-443 RC-443-B RC-443-B**

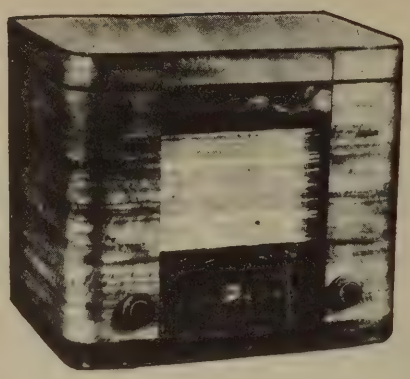
## Eight Tubes, Three Bands



*Left—Model 8Q2*

*Right—Model 8QU5*

*(8QU5C has crystal pickup; 8QU5M has magnetic pickup)*



## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22 mc (42.8-13.6 m) |
| INTERMEDIATE FREQUENCY | 455 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6B8 | I-F Amplifier, 2nd Det., A.V.C. |
| (4) RCA-6SC7 | A-F Amplifier, Phase Inverter |
| (5) RCA-6F6-G | Power Output |
| (6) RCA-6F6-G | Power Output |
| (7) RCA-5Y3-G | Rectifier |
| (8) RCA-6U5/6G5 | Tuning Indicator |

PILOT LAMPS (3) ... 2-Mazda No. 44, 6.3 volts, 0.25 amp.; 1-Mazda No. 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 4.5 watts |
| Maximum | 5.5 watts |

LOUDSPEAKER (RL-63J-6)

| | |
|---|---|
| Type | 8-inch electrodynamic |
| V.C Impedance | 2.2 ohms at 400 c.p.s. |

PHONOGRAPH MOTOR ... self-starting, constant-speed, induction type

CRYSTAL PICKUP

| | |
|---|---|
| Impedance | 100,000 ohms at 1,000 c.p.s. |
| Average Output | 1.5 volts at 1,000 c.p.s. across 500,000 ohms load |

MAGNETIC PICKUP

| | |
|---|---|
| Impedance | 96 ohms at 1,000 c.p.s. |
| Average Output | 0.14 volts at 400 c.p.s. across open circuit |

POWER SUPPLY RATINGS

**8Q2:**

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 75 watts |
| Rating B | 105-125 volts, 25-60 cycles, 75 watts |
| Rating C | 100-130, 140-160, 195-250 volts, 40-60 cycles, 75 watts |

**8QU5C and 8QU5M**

| | |
|---|---|
| Rating A5 | 105-125 volts, 50 cycles, 105 watts |
| Rating A6 | 105-125 volts, 60 cycles, 105 watts |
| Rating C5 | 105-125; 200-250 volts, 50 cycles, 105 watts |
| Rating C6 | 105-125; 200-250 volts, 60 cycles, 105 watts |

## Victrola Data

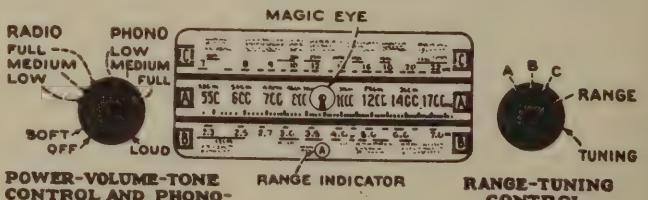
The 8QU5M is equipped with a magnetic pickup, and the 8QU5C with a crystal pickup. The output of the crystal pickup is fed directly into the Victrola jack at the rear of the chassis. On instruments using a magnetic pickup, a transformer and compensating circuit are used between the pickup and the Victrola jack (see schematic diagram). The transformer has two jacks, the larger one (primary) for input from the pickup and the smaller one (secondary) for output to the compensating circuit. The components of the compensating circuit are mounted externally to the chassis on a terminal board in the rear of the cabinet.

The phonograph motor is a self-starting, constant-speed induction type. It should be lubricated every six months by applying a few drops of light machine oil to the spindle bearing and oil hole.

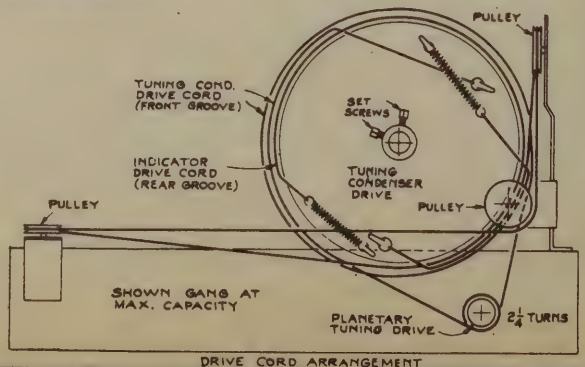
The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

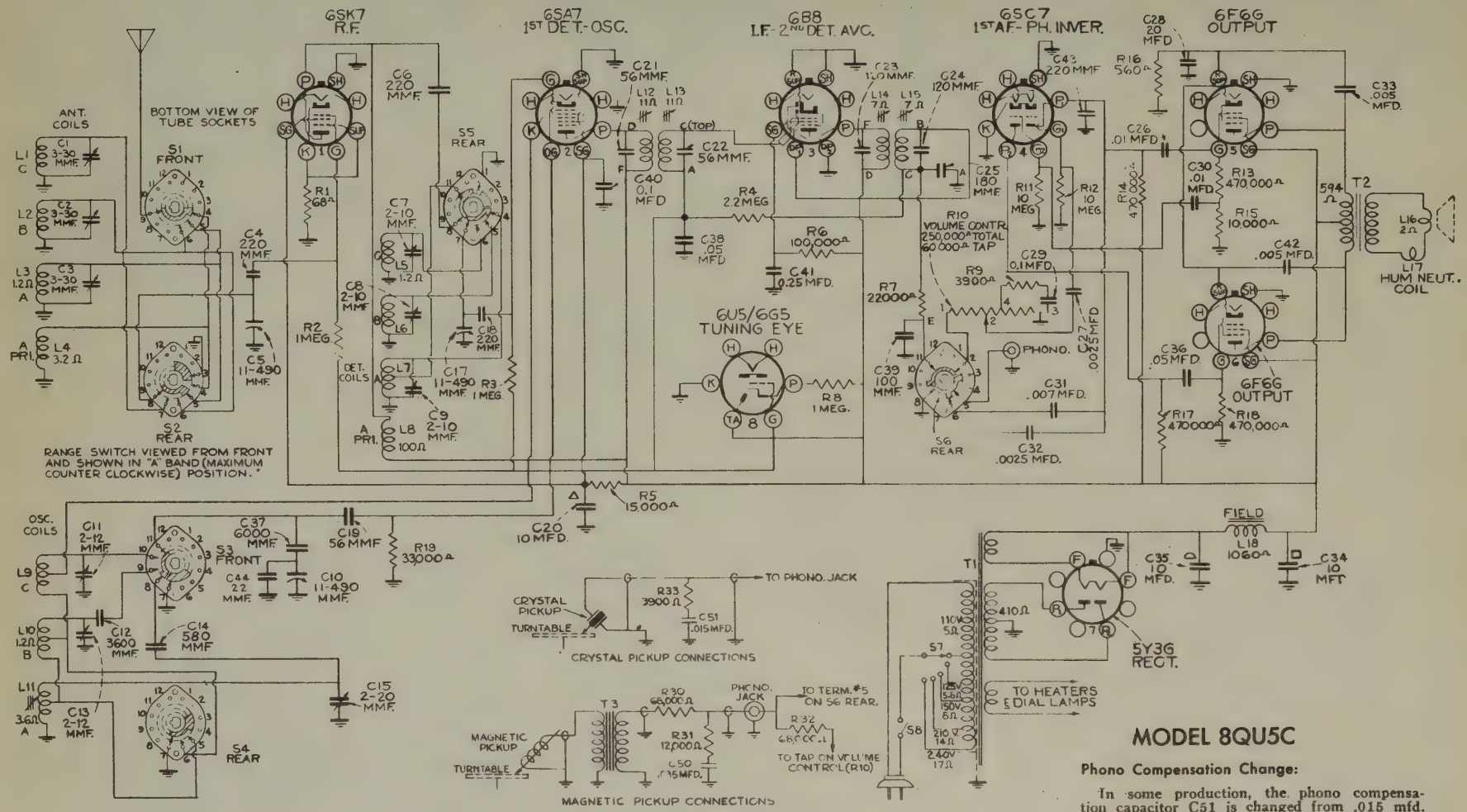
The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1¾ inches from the center line of the spindle shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.




POWER-VOLUME-TONE CONTROL AND PHONO-RADIO SWITCH — RANGE INDICATOR — RANGE-TUNING CONTROL




DRIVE CORD ARRANGEMENT




## MODEL 8QU5C

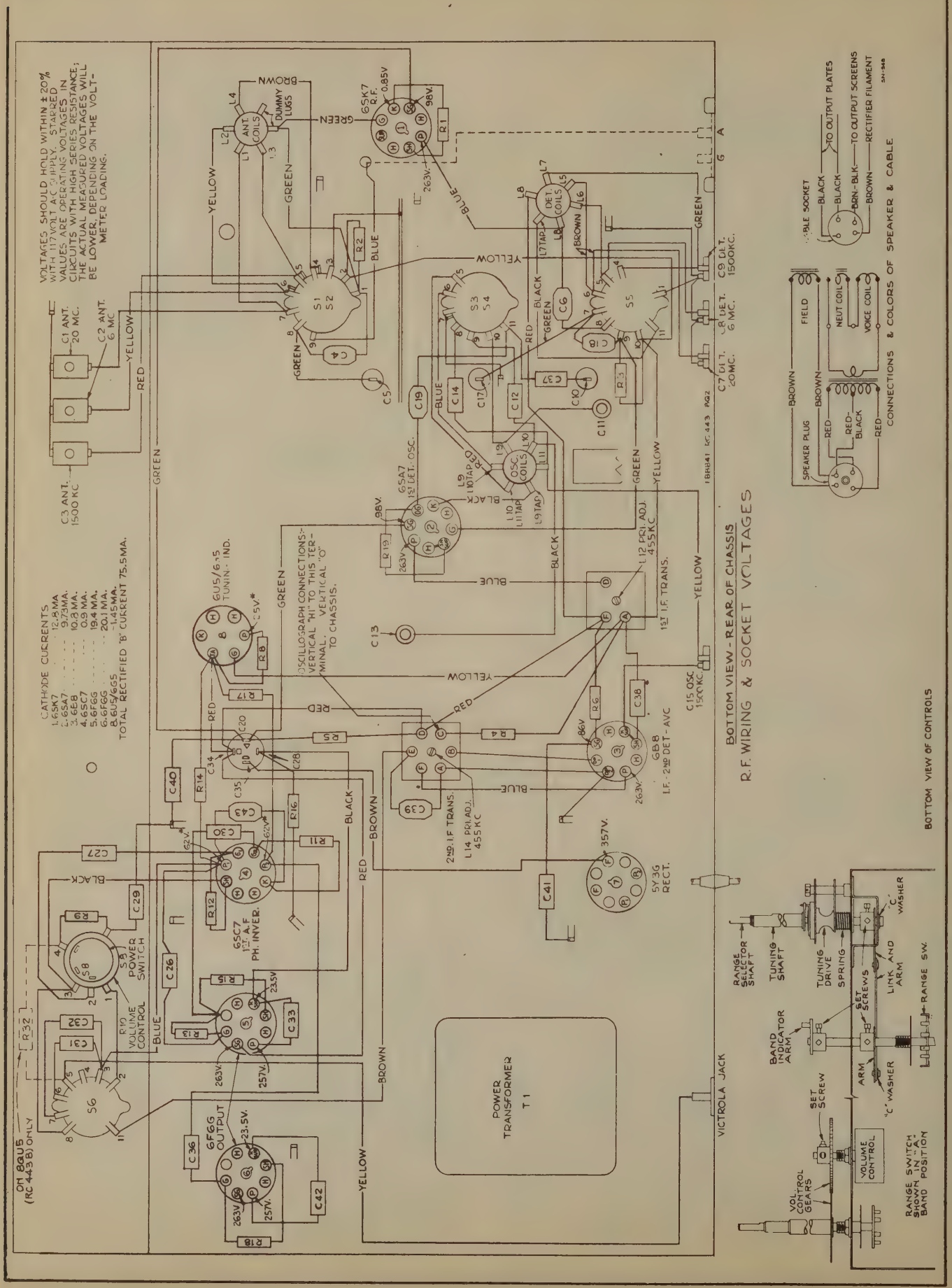
**Phono Compensation Change:**

In some production, the phono compensation capacitor C51 is changed from .015 mfd. to .035 mfd. (Stock No. 5196), and is shunted with an 82,000 ohm resistor (Stock No. 14023).

**Precautionary Lead Dress:**

1. Leads from L5 and L6 to terminals 5 and 6 on S5, and the leads from these terminals to C7 and C8, should be dressed as far as possible from parts at ground potential.
2. The lead from the detector gang (C17) to terminal 7 on S5, and the lead from the 6SA7 grid to terminal 9 on S5 should be kept away from ground and from parts in the oscillator grid circuit, such as C37, C19, S3 and S4.
3. The lead from terminal E on the second I-F transformer to terminal 11 on S6 should be dressed against the sub-base.
4. The lead from the plate of the 6SK7 (R-F) to L8 should be dressed away from parts at ground potential.
5. The lead from the grid of the 6SK7 (R-F) to terminal 1 on S1 should be kept as far as possible from the antenna lead running to terminal 9 on S1.

# 8Q2, 8QU5


VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 VOLT AC SUPPLY. STARRED VALUES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
CATHODE CURRENTS
1. 6SK7 ..... 12.4 MA.
2. 6SA7 ..... 9.73 MA.
3. 6E8 ..... 10.3 MA.
4. 6SC7 ..... 0.9 MA.
5. 6F6G ..... 19.4 MA.
6. 6F6G ..... 20.1 MA.
8. 6U5/6G5 ..... 1.45 MA.
TOTAL RECTIFIED 'B' CURRENT 75.5 MA.
BOTTOM VIEW - REAR OF CHASSIS
R.F. WIRING & SOCKET VOLTAGES
BOTTOM VIEW OF CONTROLS
CONNECTIONS & COLORS OF SPEAKER & CABLE
ON 8QU5 (RC 443 B) ONLY
POWER TRANSFORMER T1
VICTROLA JACK
C1 ANT. 20 MC.
C2 ANT. 6 MC
C3 ANT. 1500 KC
6SK7 R.F.
6SA7 1ST DET. OSC.
6SC7 1ST A.F. PH. INVER.
6F6G OUTPUT
6U5/6G5 TUNIN. IND.
6B8 I.F. - 2ND DET - AVC
5Y3G RECT.
C7 DET. 20MC.
C8 DET. 6 MC.
C9 DET. 1500KC.
L12 PRI. ADJ. 455KC
1ST I.F. TRANS.
L14 PRI. ADJ. 455 KC
2ND I.F. TRANS.
C15 OSC 1500KC
OSCILLOGRAPH CONNECTIONS:- VERTICAL "HI" TO THIS TERMINAL. VERTICAL "O" TO CHASSIS.
S1 S2
S3 S4
S5
S6
S7 POWER SWITCH
S8 VOLUME CONTROL
RANGE SELECTOR SHAFT
TUNING SHAFT
TUNING DRIVE SPRING
SET SCREWS
LINK AND ARM
RANGE SW.
BAND INDICATOR ARM
SET SCREW
ARM
"C" WASHER
VOLUME CONTROL
VOL. CONTROL GEARS
RANGE SWITCH SHOWN IN BAND POSITION
SPEAKER PLUG
FIELD
NEUT. COIL
VOICE COIL
TO OUTPUT PLATES
TO OUTPUT SCREENS
RECTIFIER FILAMENT

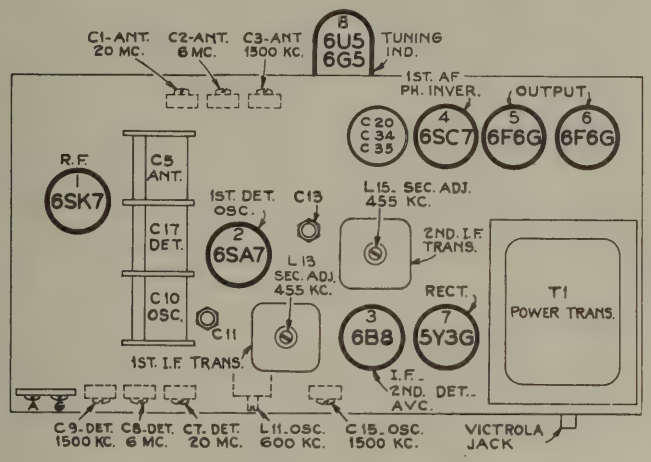
# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.




**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

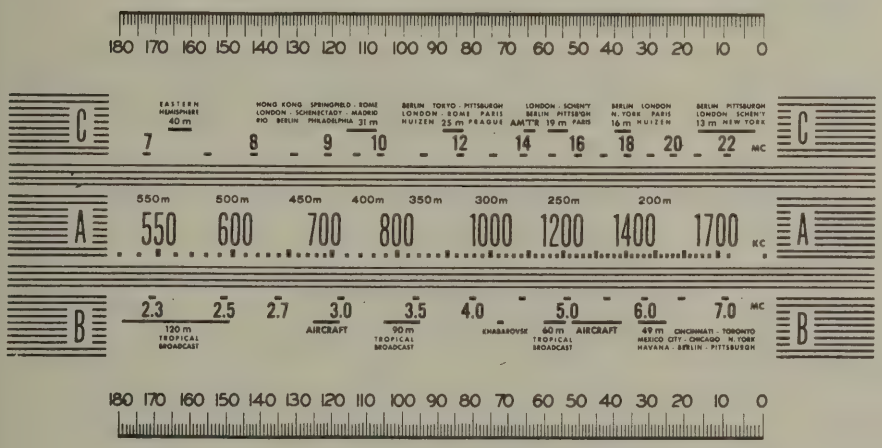
| Steps | Connect the high side of test-osc. to | Tune test-osc. to | Turn radio dial to | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6B8-I-F grid in series with .01 mfd. | 455 kc | Quiet point on "C" Band | L14 and L15 (2nd I-F Trans.) |
| 2 | Stator of middle section of gang [C17] in series with .01 mfd. | | | L12 and L13 (1st I-F Trans.) |
| 3 | Ant. terminal in series with 200 mmfd. | 600 kc | 600 kc (148°) "A" Band | L11 (osc.) Rock gang |
| 4 | | 1,500 kc | 1,500 kc (28°) "A" Band | C15 (osc.)* C9 (det.)† C3 (ant.) |
| 5 | Ant. terminal in series with 300 ohms | 6.1 mc | 6.1 mc (29°) "B" Band | C13 (osc.)* C8 (det.)† C2 (ant.) |
| 6 | | 20 mc | 20 mc (23°) "C" Band | C11 (osc.)* C7 (det.)† C2 (ant.) |

* Use **minimum** capacity peak if two peaks can be obtained.

† Use **maximum** capacity peak if two peaks can be obtained.

NOTE: Oscillator tracks 455 kc above signal on all bands.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed




## Calibration Scale

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 33° on the calibration scale corresponds to approximately 7.9 mc on "C" band, and 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **CHASSIS ASSEMBLIES (RC-443 and RC-443B)** | | 31405 | Capacitor—6,000 mmfd. (C37) | |
| | | | 5107 | Capacitor—.0025 mfd. (C27, C32) | |
| | | | 4838 | Capacitor—.005 mfd. (C33, C42) | |
| 34133 | Arm—Band indicator arm—located on range switch shaft | | 13033 | Capacitor—.007 mfd. (C31) | |
| 34502 | Arm—Operating arm on range switch shaft | | 4858 | Capacitor—.01 mfd. (C26, C30) | |
| 10194 | Ball—Steel ball | | 32787 | Capacitor—.05 mfd. (C36, C38) | |
| 31767 | Board—Antenna ground terminal board | | 32786 | Capacitor—0.1 mfd. (C29, C40) | |
| 34131 | Bracket—Drive cord pulley and brackets | | 12484 | Capacitor—0.25 mfd. (C41) | |
| 33819 | Capacitor—Trimmer capacitor—3 sections of 2-10 mmfd. each | | 33014 | Capacitor—Comprising 3 sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts (C20, C28, C34, C35) | |
| 12714 | Capacitor—Air trimmer capacitor—2-12 mmfd. (C11, C13) | | 33762 | Coil—Antenna coil—A-B-C bands (L1, L2, L3, L4) | |
| 33817 | Capacitor—Trimmer capacitor—1 section of 2-20 mmfd. (C15) | | 33763 | Coil—Detector coil—A-B-C bands (L5, L6, L7, L8) | |
| 33820 | Capacitor—Trimmer capacitor—3 sections of 3-30 mmfd. each (C1, C2, C3) | | 32824 | Coil—Oscillator coil—A-B-C bands (L9, L10, L11) | |
| 31868 | Capacitor—22 mmfd. (C44) | | 33756 | Condenser—Variable tuning condenser (C5, C10, C17) | |
| 12723 | Capacitor—56 mmfd. (C19) | | 33814 | Control—Volume control and switch (R10, S8) | |
| 30949 | Capacitor—56 mmfd. (C21, C22) | | 32635 | Cord—Indicator drive cord | |
| 12720 | Capacitor—100 mmfd. (C39) | | 32634 | Cord—Tuning condenser drive cord | |
| 12404 | Capacitor—120 mmfd. (C23, C24) | | 32713 | Core—Adjustable core and stud for oscillator coils | |
| 14712 | Capacitor—180 mmfd. (C25) | | 33770 | Drive—Planetary tuning drive—less shafts and balls, and shaft retainer | |
| 12694 | Capacitor—220 mmfd. (C4, C6, C18, C43) | | | | |
| 33235 | Capacitor—580 mmfd. (C14) | | | | |
| 12811 | Capacitor—3,600 mmfd. (C12) | | | | |

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 33773 | Drum—Variable tuning condenser drum and hub |
| 33185 | Gear—Shaft and gear for volume control |
| 34132 | Gear—Shaft and gear for tone control |
| 11891 | Lamp—Pilot lamp |
| 33767 | Link—Operating link and arm on range switch knob shaft |
| 5040 | Plug—4-contact female plug for speaker cable |
| 34130 | Pulley—Drive pulley and brackets |
| 14281 | Resistor—68 ohms, ½ watt (R1) |
| 17214 | Resistor—560 ohms, 2 watt (R16) |
| 12955 | Resistor—3,900 ohms, ½ watt (R9) |
| 14559 | Resistor—10,000 ohms, ½ watt (R15) |
| 33489 | Resistor—15,000 ohms, 2½ watt (R5) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R19) |
| 3252 | Resistor—100,000 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R13, R14, R17, R18) |
| 13730 | Resistor—1 megohm, ½ watt (R2, R3, R8) |
| 12679 | Resistor—2.2 megohms, ½ watt (R4) |
| 13601 | Resistor—10 megohms, ½ watt (R11, R12) |
| 14350 | Screw—No. 8-32 x 11/32 square head set screw for gear and drum |
| 34134 | Shaft—Range switch shaft |
| 34135 | Shaft—Tuning knob shaft |
| 33829 | Socket—Magic Eye bracket and socket |
| 14278 | Socket—Phonograph input socket |
| 31364 | Socket—Pilot lamp socket |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Indicator drive cord spring |
| 33769 | Spring—Planetary tuning drive spring |
| 31418 | Spring—Tuning condenser drive cord spring |
| 33757 | Switch—Range switch (S1, S2, S3, S4, S5) |
| 34602 | Switch—Tone control (S6) |
| 32263 | Transformer—1st I.F. transformer (L12, L13, C21, C22) |
| 14308 | Transformer—2nd I.F. transformer (L14, L15, C23, C24, C25, R7) |
| 31734 | Transformer—Power transformer—105/125 volts, 25/60 cycle (T1) |
| 31733 | Transformer—Power transformer—105/125 volts, 50/60 cycle (T1) |
| 31735 | Transformer — Power transformer — 105/130, 140/160, 200/250 volts, 50/60 cycle (T1, S7) |
| | **MOTOR ASSEMBLIES (Model 8QU5-C) (Model 8QU5-M)** |
| 32650 | Field—Motor field coils and laminations, 110 volts, 50 cycle |
| 32336 | Field—Motor field coils and laminations, 110 volts, 60 cycle |
| 33220 | Motor—105-125 volts, 50 cycles—less mounting plate |
| 33219 | Motor—105-125 volts, 60 cycles—less mounting plate |
| 33361 | Shaft—Turntable spindle shaft and gear — 50 cycle |
| 33360 | Shaft—Turntable spindle shaft and gear — 60 cycle |
| | **PICKUP AND ARM ASSEMBLIES (Model 8QU5-M)** |
| 34304 | Arm—Pickup arm—less unit cable and pivot arm |
| 34303 | Arm—Pivot arm and set screw |
| 14291 | Armature—Pickup armature |
| 14930 | Coil—Pickup coil |
| 14292 | Damper—Pickup armature damper |
| 32228 | Pickup Unit—Magnet, coil, needle screw, and armature, assembled |
| 34300 | Screw—No. 6-32 x ¼ headless set screw for pick-up pivot arm |
| 3811 | Screw—Needle screw |
| | **PICKUP AND ARM ASSEMBLIES (Model 8QU5-C)** |
| 34305 | Arm—Pickup arm—less crystal, cable, and pivot arm |
| 34306 | Arm—Pickup pivot arm with set screw |
| 34550 | Bushing—Rubber bushing for pickup pivot arm |
| 34307 | Crystal—Pickup crystal cartridge and needle screw |
| 33529 | Screw—Needle screw |
| 34300 | Screw—No. 6-32 x ¼ headless set screw for pick-up pivot arm |

| STOCK No. | DESCRIPTION |
|---|---|
| | **AUTOMATIC SWITCH ASSEMBLIES (Model 8QU5-C) (Model 8QU5-M)** |
| 34315 | Base—Pickup arm base for crystal pickup — Model 8QU5-C |
| 34312 | Base—Pickup arm base for magnetic pickup—Model 8QU5-M |
| 32865 | Bracket—Switch bracket and terminal board |
| 34308 | Cam—Switch cam assembly with spring |
| 32864 | Lever—Switch actuating lever, roller, and clip |
| 34309 | Mounting—Pickup arm base mounting (rubber grommet, washers, and nut) |
| 34311 | Ring—Retaining ring for pickup arm pivot shaft |
| 14195 | Screw—No. 10-32 x 5/16 set screw for switch cam hub |
| 34314 | Shaft—Pickup arm pivot shaft—for crystal pick-up—Model 8QU5-C |
| 34313 | Shaft—Pickup arm pivot shaft — for magnetic pickup—Model 8QU5-M |
| 34310 | Spool—Insulating spool for switch leads |
| 32868 | Spring—Switch lever spring |
| 32867 | Spring—Tension spring for switch cam |
| 32866 | Switch—Mercury tube and leads |
| 31608 | Washer—Retaining washer for switch lever |
| | **SPEAKER ASSEMBLIES (RL-63-J6)** |
| 31825 | Cap—Dust cap |
| 12079 | Coil—Field coil (L18) |
| 11469 | Coil—Neutralizing coil (L17) |
| 34274 | Cone—Cone, complete with voice coil and dust cap (L16) |
| 5039 | Plug—4-prong male for speaker |
| 14534 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32610 | Bumper — Rubber bumper for pickup arm — Models 8QU5-C and 8QU5-M |
| 34308 | Cam — Actuating cam for automatic switch — Models 8QU5-C and 8QU5-M |
| 11315 | Capacitor—.015 mfd.—Model 8QU5-C (C51) |
| 5196 | Capacitor—.035 mfd.—Model 8QU5-M (C50) |
| 33680 | Cup—Needle cup—Models 8QU5-C and 8QU5-M |
| 31464 | Damper—Turntable rubber drive sleeve and metal damper plate—Models 8QU5-C and 8QU5-M |
| 34142 | Dial—Dial glass scale |
| 34140 | Frame—Dial frame less pointers, dial glass and guide rods |
| 13085 | Hinge—Cabinet lid hinge—Models 8QU5-C and 8QU5-M |
| 11607 | Holder—Packaged needle holder—Models 8QU5-C and 8QU5-M |
| 34144 | Indicator—Band indicator strip |
| 34141 | Indicator—Station selector indicator and carriage |
| 34139 | Knob—Range switch knob |
| 34137 | Knob—Tone control knob |
| 34136 | Knob—Volume control or tuning knob |
| 31048 | Plug—2-contact male plug for phono. input cable —Models 8QU5-C and 8QU5-M |
| 12955 | Resistor—3,900 ohms, ½ watt—Model 8QU5-C (R33) |
| 30128 | Resistor—12,000 ohms, ½ watt—Model 8QU5-M (R31) |
| 13715 | Resistor—68,000 ohms, ½ watt—Model 8QU5-M (R30) |
| 34568 | Rest—Pickup rest—Models 8QU5-C and 8QU5-M |
| 34143 | Rod—Dial pointer slide rod—Models 8QU5-C and 8QU5-M |
| 34491 | Rod—Pointer carriage guide rod—Model 8Q2 |
| 34316 | Screw—Motor mounting screws, washers, and spacers (sufficient for 1 motor) — Models 8QU5-C and 8QU5-M |
| 14195 | Screw—No. 10-32 set screw for cam, Stock No. 34308 |
| 34145 | Slide—Band indicator slide less strip |
| 32867 | Spring—Actuating cam spring |
| 4982 | Spring—Retaining spring for knob, Stock No. 34136 |
| 14270 | Spring—Retaining spring for knob, Stock No. 34137 |
| 34138 | Spring—Retaining spring for knob, Stock No. 34139 |
| 31164 | Support—Cabinet lid support—Models 8QU5-C and 8QU5-M |
| 14609 | Transformer — Phono. input transformer for model with magnetic pickup—Model 8QU5-M |
| 33532 | Turntable—10-inch turntable—Models 8QU5-C and 8QU5-M |

**Additional Replacement Part:**

Stock No.

30870 Plug—2-prong male plug for motor leads (8QU5-C and -M)

# Eight-Tube, Four-Band Superheterodyne Receiver

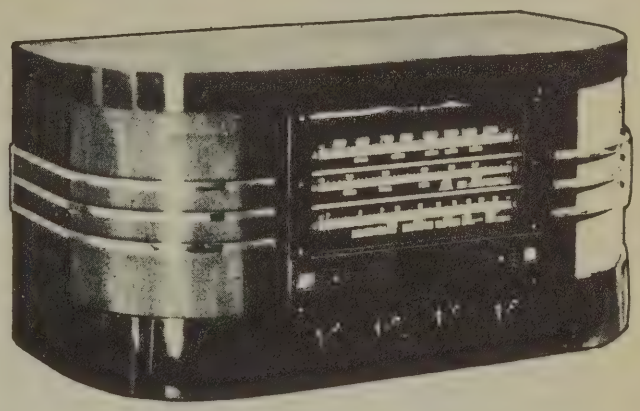
# MODEL 8Q4

**Chassis No. RC-337A**

## Miscellaneous Service Data

**Plug for Extension Loudspeaker.**—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired. A permanent-magnet dynamic speaker, with voice-coil impedance of **not less than 2 ohms** is recommended. The voice coil of the extension speaker should be connected by means of two-conductor cable (such as is used on electric appliances) to the male plug. This cable may be any desired length up to several hundred feet. With a long run, it is advisable to use heavier cable. An extension speaker with 2-ohm voice coil will receive approximately half the power output of the receiver. With a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased. (A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.) The RCA MI-6248 Alnico 8-inch diameter permanent-magnet dynamic loudspeaker with 2-ohm voice coil, and 5-watt power-handling capacity is recommended. This speaker may be housed in the RCA MI-6292 sloping-front walnut-finished wood housing.

**Antenna Connections.**—Three terminals ("A," "G1," and "G2") are provided on the rear of chassis. Connect the antenna to "A." Connect "G1" to a nearby ground. A link connects "G1" and "G2." In case of electrical interference (especially on "X" band) open the link and connect "G2" separately to ground. This also applies when a D-C power supply is used.



## Power Supply Units

Model 8Q4 has a seven-prong connector for connection to a separate power supply unit. Units are available in different ratings for a-c and d-c operation, as listed under "Power Supply Ratings" in the electrical specifications.

The d-c power supply unit (PSU 8E) is too large to be mounted inside the cabinet and may be placed on the table behind the receiver, or in any other convenient location that permits plugging into the connector on the receiver chassis.

Service data, diagrams, and replacement parts lists for the power supply units are printed in separate service data sheets, which should be referred to for further information.

## Electrical Specifications

FREQUENCY RANGES

Long Wave ("X" Band)..... 150-400 kc (2,000-750 m)
Standard Broadcast ("A" Band). 530-1,720 kc (566-174 m)
Medium Wave ("B" Band)..... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)..... 7.0-22 mc (42.8-13.6 m)

Intermediate Frequency..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6K7..... R-F Amplifier
(2) RCA-6L7..... 1st-Detector
(3) RCA-6J7..... Oscillator
(4) RCA-6K7..... I-F Amplifier
(5) RCA-6Q7..... 2nd-Detector, A.V.C., and Audio
(6) RCA-6F6-G..... Power Output
(7) RCA-6U5..... Tuning Indicator
(8) RCA-5Y3-G (In PSU 8A, 8B, 8C AC power supply unit)..... Rectifier
(8) RCA-5W4 (In PSU 8E D-C power supply unit)..... Rectifier

Pilot Lamps (2)..... Mazda No. 44, 6.3 volts, .25 amp.

POWER OUTPUT

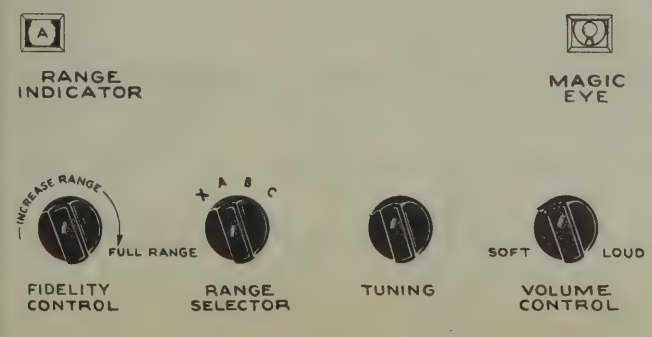
Undistorted..... 2.5 watts
Maximum..... 4.5 watts

LOUDSPEAKER (RL-63J-1)

Type..... 8-inch electrodynamic
Voice-Coil Impedance at 400 cycles..... 2.2 ohms

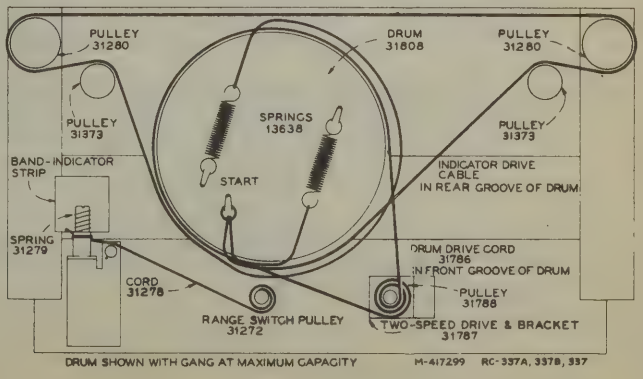
POWER SUPPLY RATINGS

| | Volts | Cycles |
|---|---|---|
| **A-C Ratings** | | |
| With PSU 8A | 105-125 | 50-60 |
| With PSU 8B | 105-125 | 25-60 |
| With PSU 8C | 105-130, 140-160, 200-225, 225-250 | 50-60 |
| **D-C Rating** | | |
| With PSU 8E | 105-125, 210-250 | D-C |

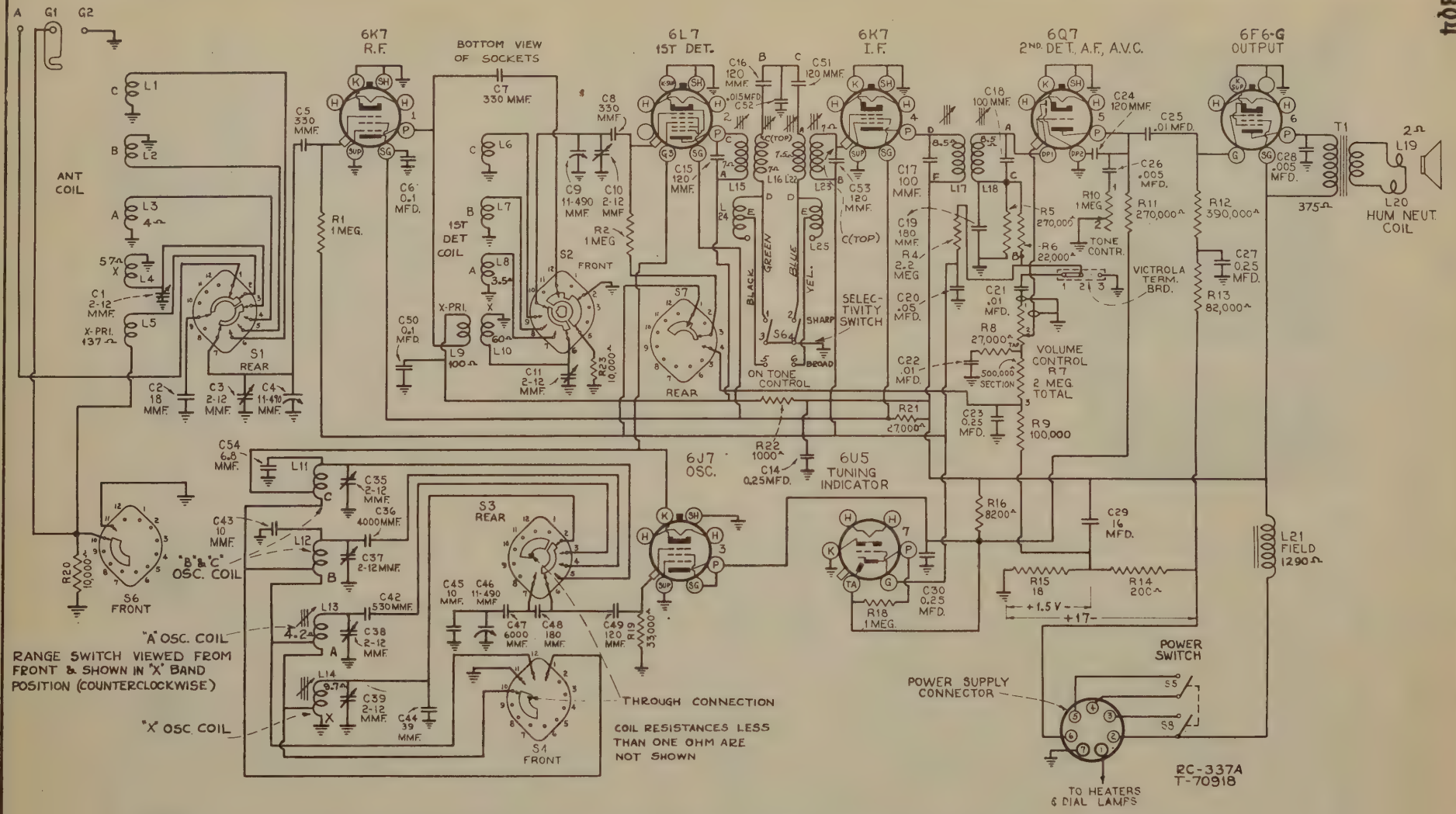



*Location of Controls*

A toggle-type power switch is mounted on the right-hand side of the cabinet




*Arrangement of Drive Cords*

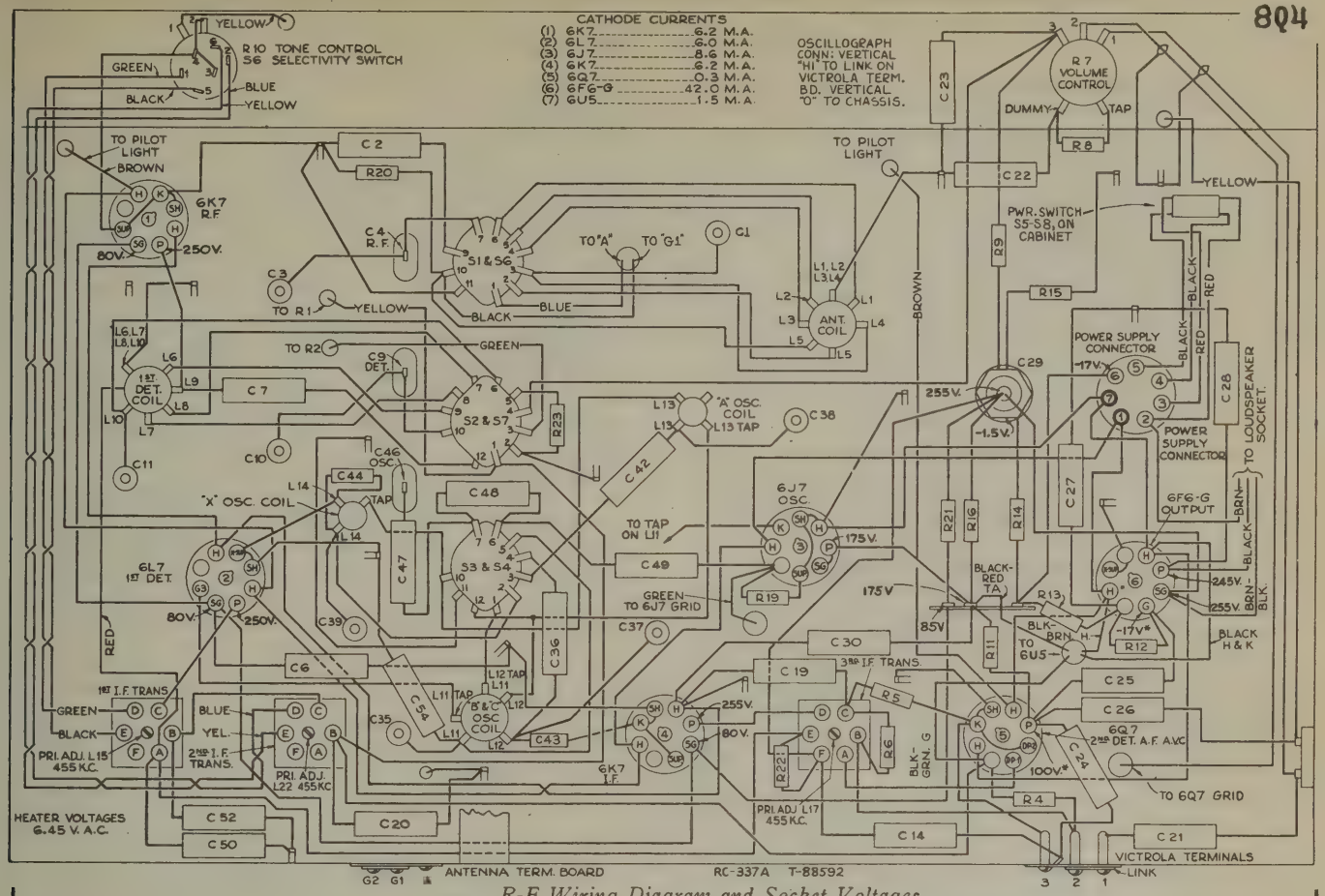



*Schematic Circuit Diagram of Chassis*

**The Power Supply Units (PSU 8A, 8B, 8C, and 8E) are described in separate service data sheets, which should be referred to for further information.**

**Precautionary Lead Dress.—**

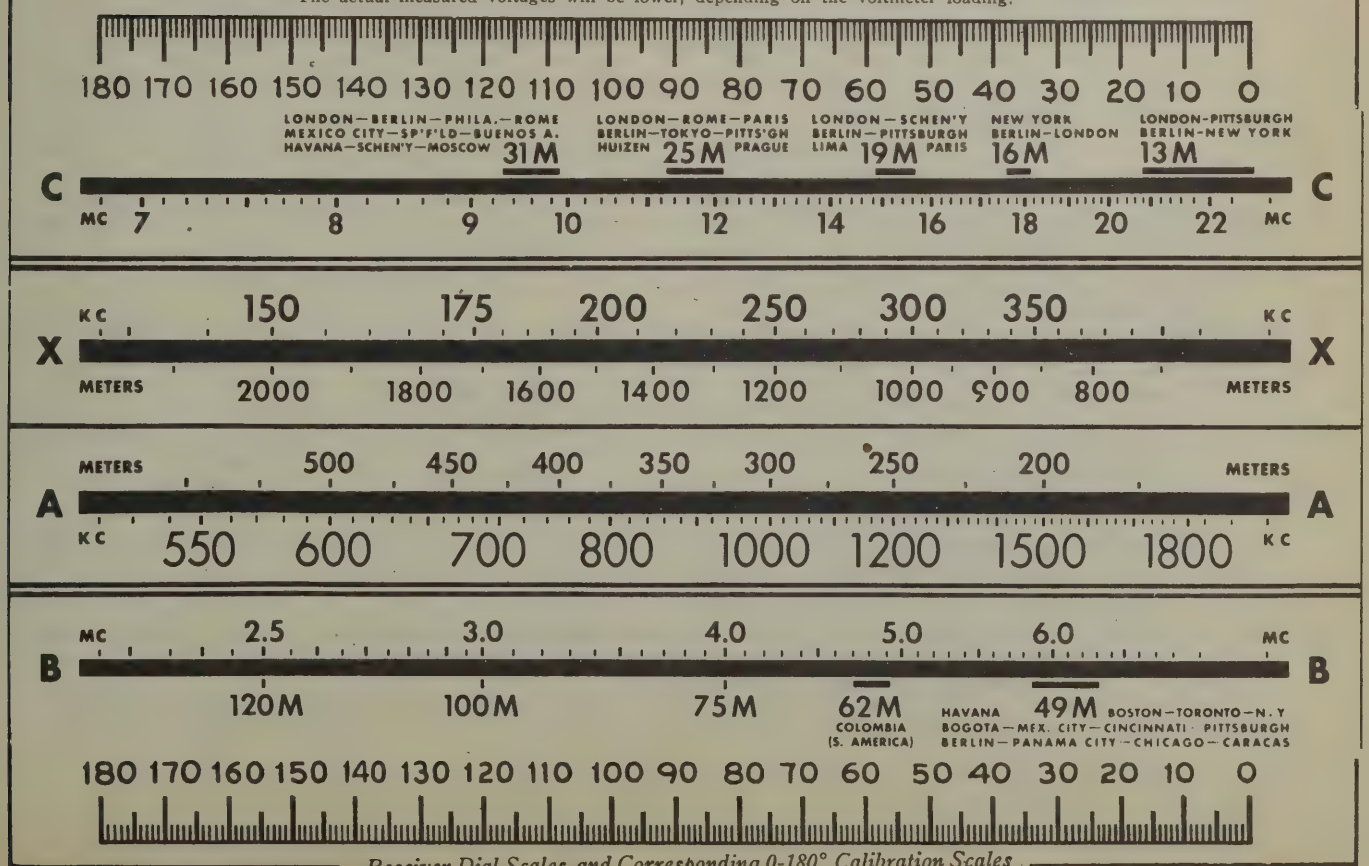
1. Dress all leads and wiring parts away from 6J7 oscillator grid.
2. Twist together the two leads from the 1st i-f transformer to the fidelity switch. Also the two leads from the 2nd i-f transformer.
3. Dress all leads away from the detector coil.
4. Dress leads from the detector coil to the range switch (contacts 7 and 8 on detector section of switch) away from the detector trimmer C10.




*R-F Wiring Diagram and Socket Voltages*

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ± 20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
LONDON—BERLIN—PHILA.—ROME MEXICO CITY—SP'F'LD—BUENOS A. HAVANA—SCHEN'Y—MOSCOW
31 M
LONDON—ROME—PARIS BERLIN—TOKYO—PITTS'GH HUIZEN
25 M PRAGUE
LONDON—SCHEN'Y BERLIN—PITTSBURGH LIMA
19 M PARIS
NEW YORK BERLIN—LONDON
16 M
LONDON-PITTSBURGH BERLIN-NEW YORK
13 M
C
MC 7 8 9 10 12 14 16 18 20 22 MC
X
KC 150 175 200 250 300 350 KC
METERS 2000 1800 1600 1400 1200 1000 900 800 METERS
A
METERS 500 450 400 350 300 250 200 METERS
KC 550 600 700 800 1000 1200 1500 1800 KC
B
MC 2.5 3.0 4.0 5.0 6.0 MC
120 M
100 M
75 M
62 M COLOMBIA (S. AMERICA)
49 M
HAVANA BOSTON—TORONTO—N. Y BOGOTA—MEX. CITY—CINCINNATI—PITTSBURGH BERLIN—PANAMA CITY—CHICAGO—CARACAS
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

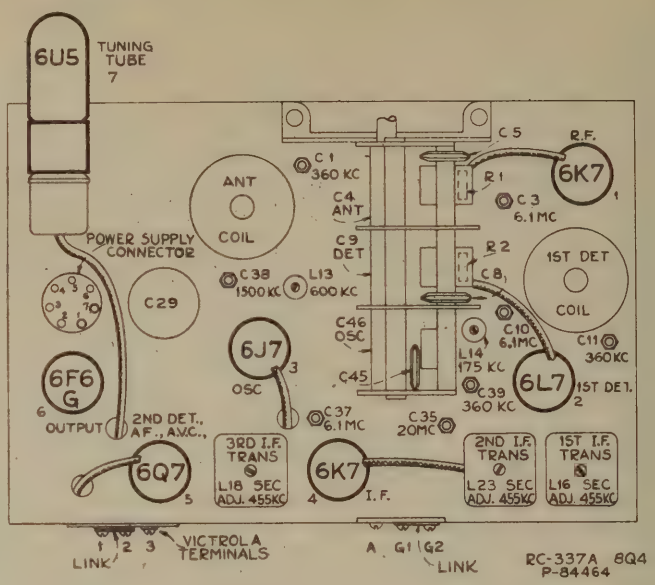
**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand marks on the dial scale, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."




| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, with 300 ohm resistor from cap to chassis | 455 kc | ——— | L17 and L18* (3rd I-F Trans.) |
| 2 | 6L7 1st-Det. grid cap, with 300 ohm resistor from cap to chassis, regular grid lead removed from cap | 455 kc | Fidelity control counter-clockwise (sharp) | L23 and L22 (2nd I-F Trans.) and L16 and L15** (1st I-F Trans.) |
| 3 | Antenna terminal (A), in series with 300 ohms | 6.1 mc | 6.1 mc (28.2°) "B" band | C37 (osc.)*** C10 (det.)† C3 (ant.) |
| 4 | Antenna terminal, in series with 300 ohms | 20 mc | 20 mc (22.5°) "C" band | C35 (osc.)†† |
| 5 | Antenna terminal, in series with 200 mmf. | 1,500 kc | 1,500 kc (32°) "A" band | C38 (osc.) |
| 6 | Antenna terminal, in series with 200 mmf. | 600 kc | 600 kc (143.8°) "A" band | L13 (osc.) |
| 7 | Repeat steps 5 and 6. | | | |
| 8 | Adjust C39 so that it projects approximately 15/16-inch above top of chassis. | | | |
| 9 | Antenna terminal, in series with 200 mmf. | 175 kc | 175 kc (121.3°) "X" band | L14 (osc.) |
| 10 | Antenna terminal, in series with 200 mmfd. | 360 kc | 360 kc (30.2°) "X" band | C39 (osc.) C11 (det.) C1 (ant.) |
| 11 | Repeat oscillator adjustments in steps 9 and 10. | | | |

* Adjust for coincident response curves when using oscillograph.

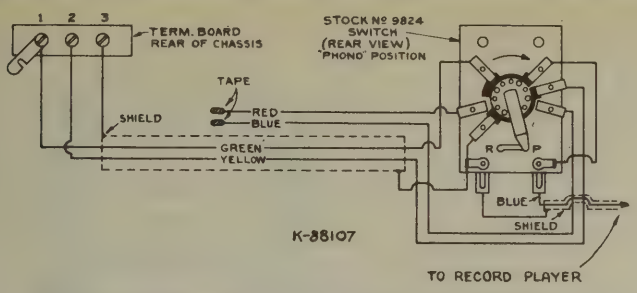
** Readjust L23, L22, L16, and L15 several times to secure coincident curves. Turn fidelity control full clockwise (broad) and check response, which should be symmetrical, and with **greater** gain than on sharp.

*** Use **minimum** capacity peak if two peaks can be obtained with C37.

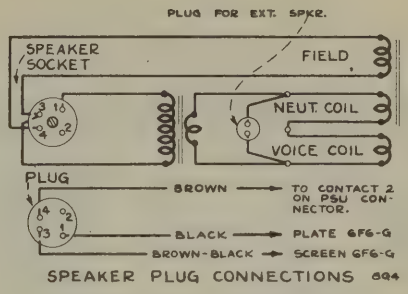
† Rock the gang condenser slightly and use **maximum** capacity peak if two peaks can be obtained with C10. Check to determine that C37 has been adjusted to the correct peak by turning receiver to 5.19 mc (50°) where a weaker signal should be received.

†† Use **minimum** capacity peak if two peaks can be obtained, and check to determine that C35 has been adjusted to the correct peak by turning the receiver to 19.09 mc (27½°) where a weaker signal should be received.

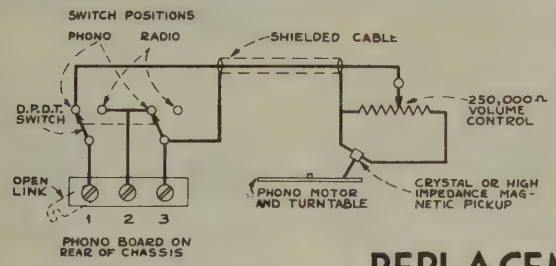
**NOTE:** The oscillator tracks 455 kc **above** the signal on all bands.




**Victrola Attachment (Record Player).**—Terminals are provided on the rear of the chassis for convenient connection to a Victrola Attachment (record player) such as the RCA R-93 and R-94 series. A stock No. 9824 switch may be used to change from radio to record player as shown above.




*Connections of Loudspeaker and Cable*




In the event that a Stock No. 9824 switch is not available, a double-pole—double-throw toggle switch may be used, connecting it as shown

The radio volume control may be used to regulate the volume of the record player.

# REPLACEMENT PARTS

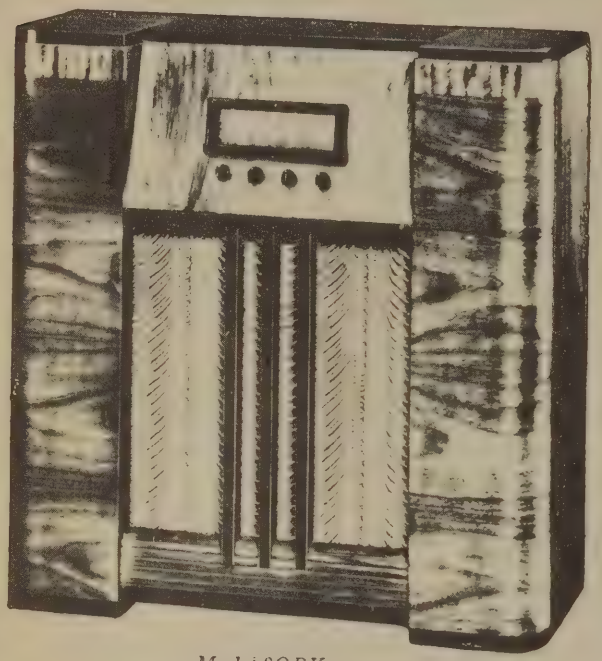
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES (RC-337A)** |
| 31815 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph input terminal board |
| 31303 | Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord |
| 31820 | Cable—Indicator pointer drive cable |
| 30766 | Cap—Rubber cap for Magic Eye |
| 12607 | Cap—Top shield cap for first or second i-f transformer |
| 12714 | Capacitor—Trimmer 2-12 mmfd. (C1, C3, C10, C11, C35, C37, C38, C39) |
| 14079 | Capacitor—6.8 mmfd. (C54) |
| 13200 | Capacitor—10 mmfd. (C43, C45) |
| 12722 | Capacitor—18 mmfd. (C2) |
| 13545 | Capacitor—39 mmfd. (C44) |
| 31270 | Capacitor—100 mmfd. (C17, C18) |
| 31813 | Capacitor—120 mmfd. (C15, C16, C51, C53) |
| 12724 | Capacitor—120 mmfd. (C24, C49) |
| 13003 | Capacitor—180 mmfd. (C19, C49) |
| 12952 | Capacitor—330 mmfd. (C5, C7, C8) |
| 31790 | Capacitor—530 mmfd. (C42) |
| 31792 | Capacitor—4,000 mmfd. (C36) |
| 31405 | Capacitor—6,000 mmfd. (C47) |
| 4838 | Capacitor—.005 mfd. (C26, C28) |
| 14393 | Capacitor—.01 mfd. (C21, C22, C25) |
| 11315 | Capacitor—.015 mfd. (C52) |
| 4886 | Capacitor—.05 mfd. (C20) |
| 4839 | Capacitor—0.1 mfd. (C6, C50) |
| 12484 | Capacitor—0.25 mfd. (C23) |
| 5212 | Capacitor—16 mfd. (C29) |
| 31818 | Clip—Magic Eye mounting clip |
| 31810 | Coil—Antenna coil (L1, L2, L3, L4, L5) |
| 31782 | Coil—Oscillator coil—"A" band only (L13) |
| 31783 | Coil—Oscillator coil—"B" and "C" bands only (L11, L12) |
| 31812 | Coil—Oscillator coil—"X" band only (L14) |
| 31811 | Coil—R-f coil (L6, L7, L8, L9, L10) |
| 31774 | Condenser—3-gang variable tuning condenser (C4, C9, C46) |
| 31278 | Cord—Band indicator cord |
| 31786 | Cord—Variable condenser drive cord |
| 31787 | Drive—Two-speed drive and mounting bracket |
| 31808 | Drum—Variable condenser drive cord drum |
| 31819 | Indicator—Band indicator strip |
| 11891 | Lamp—Dial lamp |
| 31817 | Plate—Cushion socket mounting plate—less socket |
| 5040 | Plug—4-contact female plug for speaker cable |
| 14404 | Plug—7-contact male plug for power input |
| 31788 | Pulley—Two-speed drive pulley |
| 31280 | Pulley—Indicator pointer drive cord pulley (large) |
| 31373 | Pulley—Indicator pointer drive cord pulley (small) |
| 31272 | Pulley—Range switch pulley |
| 14660 | Resistor—18 ohms, ½ watt (R15) |
| 14526 | Resistor—200 ohms, wire-wound, 2½ watt (R14) |
| 14837 | Resistor—1,000 ohms, 1/10 watt (R22) |
| 13204 | Resistor—8,200 ohms, 2 watt (R16) |
| 13302 | Resistor—10,000 ohms, 1/10 watt (R23) |
| 14559 | Resistor—10,000 ohms, ½ watt (R20) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R6) |
| 12738 | Resistor—27,000 ohms, ½ watt (R8) |
| 14167 | Resistor—27,000 ohms, 2 watt (R21) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R19) |
| 14023 | Resistor—82,000 ohms, ½ watt (R13) |
| 14560 | Resistor—100,000 ohms, ½ watt (R9) |
| 11453 | Resistor—270,000 ohms, 1/10 watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R11) |
| 13005 | Resistor—390,000 ohms, 1/10 watt (R12) |
| 12013 | Resistor—1 meg., 1/10 watt (R1, R2, R18) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R4) |
| 14887 | Retainer—Indicator drive cord pulley retainer |
| 4669 | Screw—No. 8-32 x 3/8-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808 |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31251 | Socket—Octal base tube socket |
| 31279 | Spring—Band indicator tension spring |
| 13638 | Spring—Tension spring for pointer drive cable, or variable condenser drive cord |
| 31823 | Switch—D.P.S.T. power switch with leads (S5, S8) |
| 31806 | Switch—Range switch (S1, S2, S3, S4, S6, S7) |
| 31546 | Tone Control and selectivity switch (R10, S6) |
| 31063 | Transformer—First i-f transformer (L15, L16, L24, C15, C16) |
| 31064 | Transformer—Second i-f transformer (L22, L23, L25, C51, C53) |
| 31268 | Transformer—Third i-f transformer (L17, L18, C17, C18) |
| 31450 | Volume Control (R7) |
| | **SPEAKER ASSEMBLIES (RL63J-1)** |
| 31825 | Cap—Speaker cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L20) |
| 12012 | Coil—Speaker field coil (L21) |
| 31828 | Cone—Speaker cone and voice coil (L19) |
| 31826 | Plug—4-contact male plug for speaker |
| 31827 | Speaker—Complete |
| 14355 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31834 | Dial—Dial scale and crystal |
| 31832 | Escutcheon—Dial scale escutcheon—less dial scale and crystal |
| 31717 | Indicator—Indicator pointer and carriage |
| 31802 | Knob—Station selector, tone control, volume control or range switch knob |
| 30868 | Plug—2-contact female plug for speaker cable |
| 30870 | Plug—2-contact male plug for speaker cable |
| 31287 | Rod—Pointer carriage slide rod |
| 14270 | Spring—Retaining spring for knob, Stock No. 31802 |
| 31558 | Spring—Stop spring for pointer slide rod |

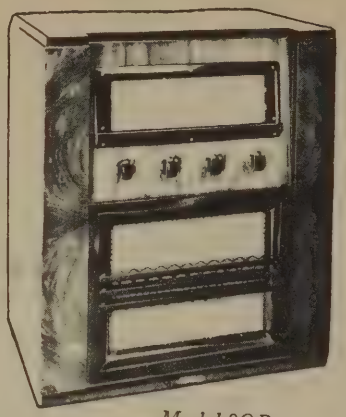
# MODELS 8QB and 8QBK

## Chassis No. RC-336

## Eight-Tube, Three-Band, Superheterodyne Receivers



*Model 8QBK*



*Model 8QB*

*Location of Controls*

The pilot lights are illuminated by pressing in the volume-control knob. (The pilot lights are not controlled by this action when the receiver is operated with the CV-110 a-c power supply unit.) Sensitivity switch is on rear of chassis.

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band).. 530-1,720 kc (566-174 m)
Medium Wave ("B" Band)..... 2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band)..... 7.0-22 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY ..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6S7-G ..... R-F Amplifier
(2) RCA-6D8-G..... 1st-Detector
(3) RCA-6J7..... Oscillator
(4) RCA-6S7-G..... 1st I-F Amplifier
(5) RCA-6S7-G..... 2nd I-F Amplifier
(6) RCA-6T7-G..... 2nd-Det., A.V.C., and Audio
(7) RCA-6L5-G..... Driver
(8) RCA-6Z7-G..... Push-Pull Power Output

**Note:** An RCA-5Y3-G rectifier is used in the CV-110 A-C power supply unit.

PILOT LAMPS (2).....Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

Maximum..... 2.8 watts
Undistorted ..... 2.0 watts

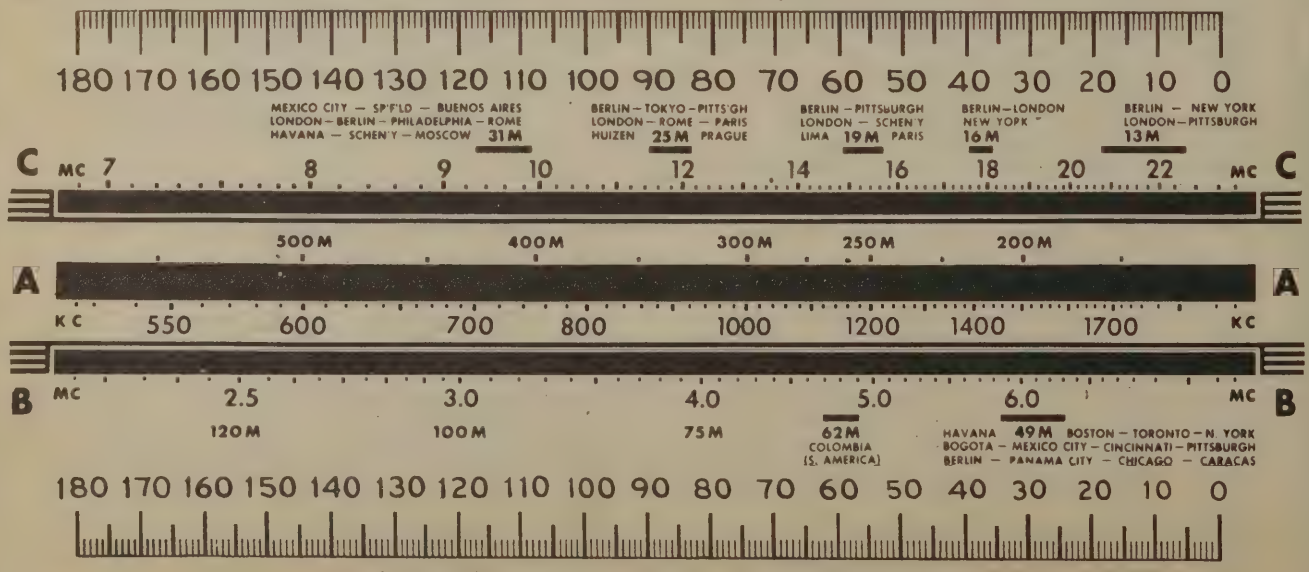
LOUDSPEAKER (Permanent-Magnet Dynamic)

Voice-coil impedance at 400 cycles..... 2.2 ohms

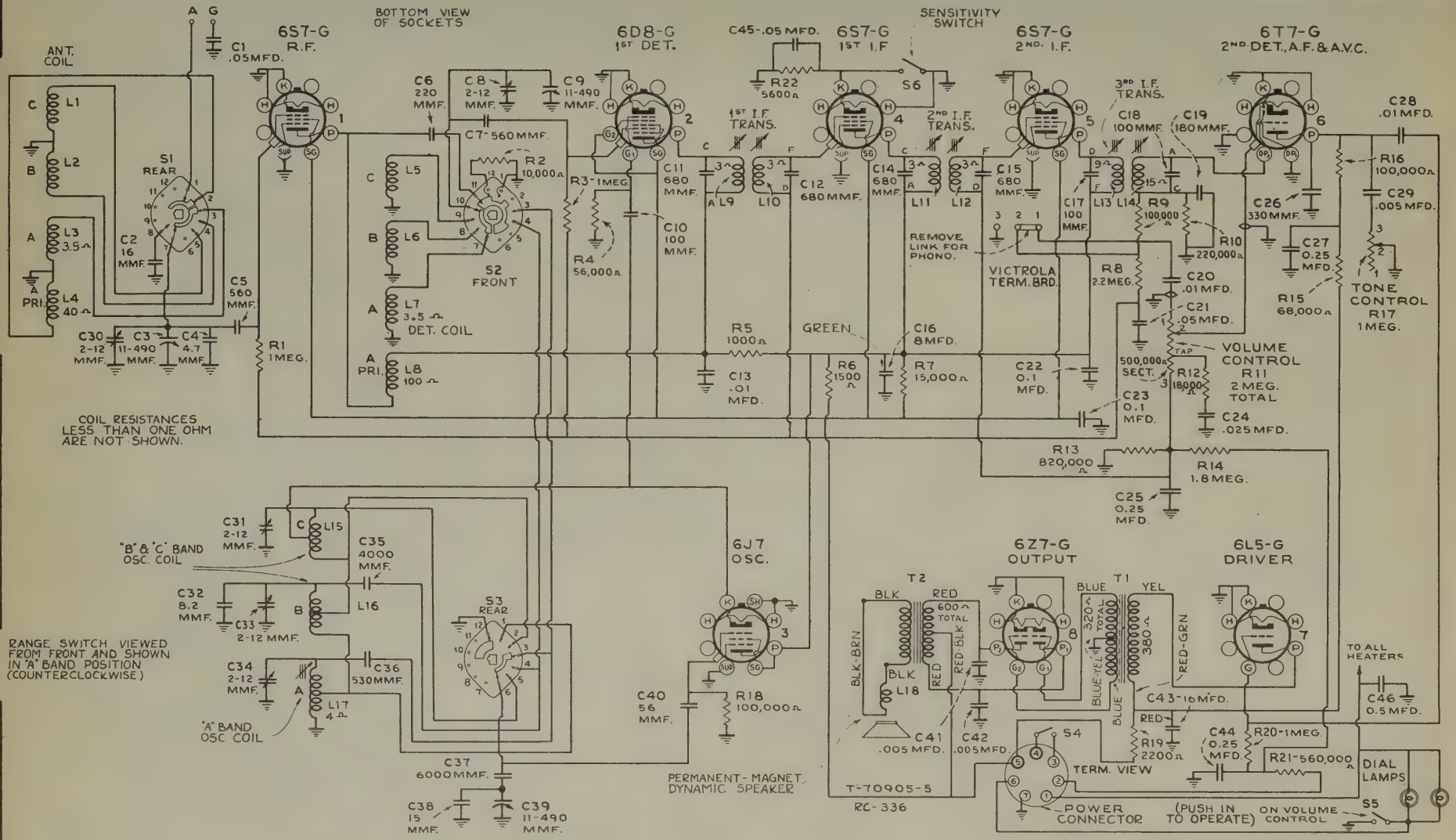
POWER SUPPLY RATING

D-C Rating (with vibrator-type power supply unit)—6.3 volts, 3.5 amps.

A-C Rating (with CV-110 A-C power supply unit)—105-117, 117-130, 140-160, 200-225, 225-250 volts, 25-60 cycles.


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
MEXICO CITY — SPR'FLD — BUENOS AIRES
LONDON — BERLIN — PHILADELPHIA — ROME
HAVANA — SCHEN'Y — MOSCOW
31M
BERLIN — TOKYO — PITTS'GH
LONDON — ROME — PARIS
HUIZEN
25M
PRAGUE
BERLIN — PITTSBURGH
LONDON — SCHEN'Y
LIMA
19M
PARIS
BERLIN — LONDON
NEW YORK
16M
BERLIN — NEW YORK
LONDON — PITTSBURGH
13M
C MC 7 8 9 10 12 14 16 18 20 22 MC C
500M 400M 300M 250M 200M
A
KC 550 600 700 800 1000 1200 1400 1700 KC
A
B MC 2.5 3.0 4.0 5.0 6.0 MC B
120M 100M 75M
62M
COLOMBIA
(S. AMERICA)
HAVANA
49M
BOSTON — TORONTO — N. YORK
BOGOTA — MEXICO CITY — CINCINNATI — PITTSBURGH
BERLIN — PANAMA CITY — CHICAGO — CARACAS
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

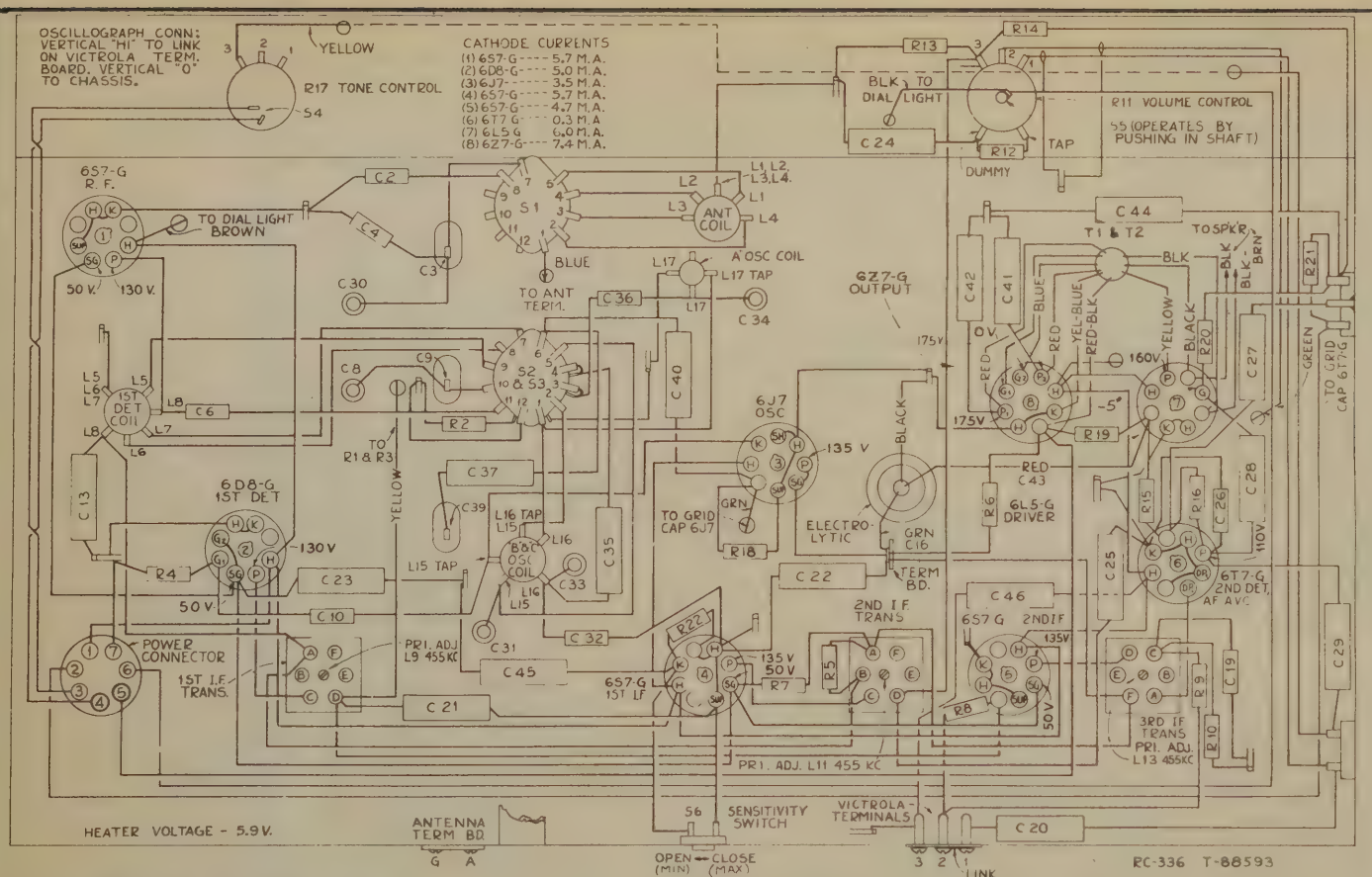
*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*




*Schematic Circuit Diagram of Chassis*

**Precautionary Lead Dress.—**

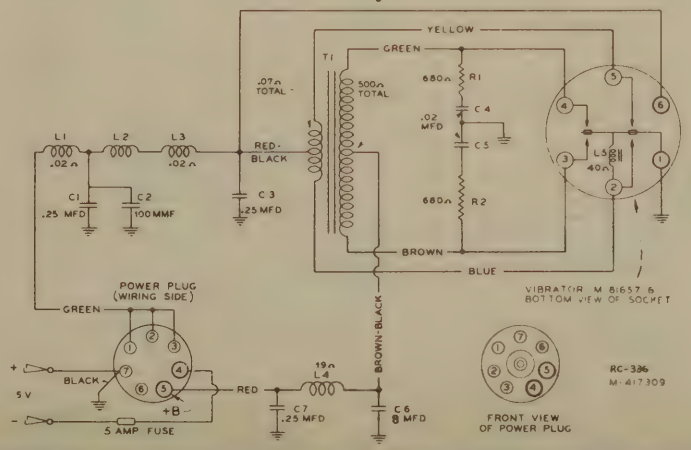
1. Dress the leads from 1st-detector coil to range switch away from trimmer C8.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to chassis.
4. Grid-cap connectors must not ground to tube shields.
5. Dress black lead from terminal 7 on power connector into corner and close to side of chassis.




*Bottom View of Chassis, with R-F Wiring Diagram and Socket Voltages*

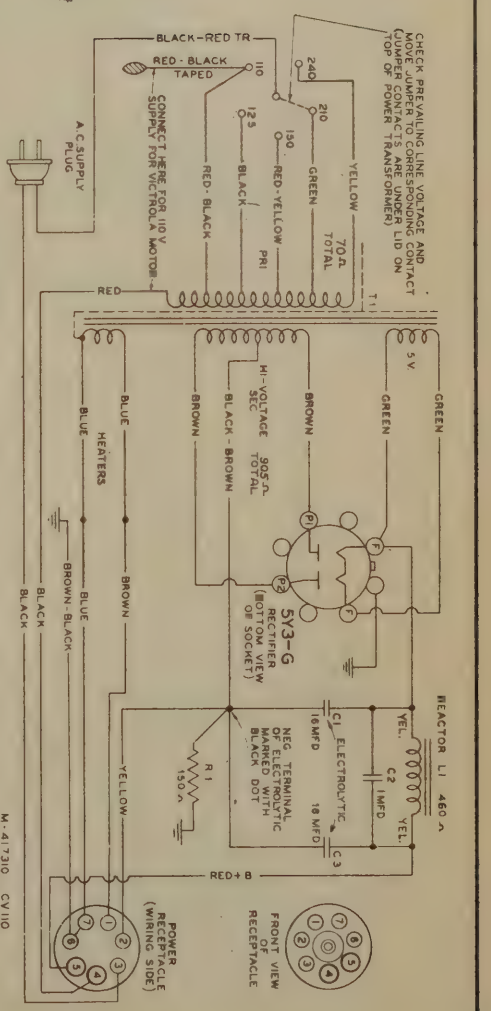
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 6-volt d-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.




*Vibrator-Type Power Supply Unit*

*CV-110 A-C Power Supply Unit*



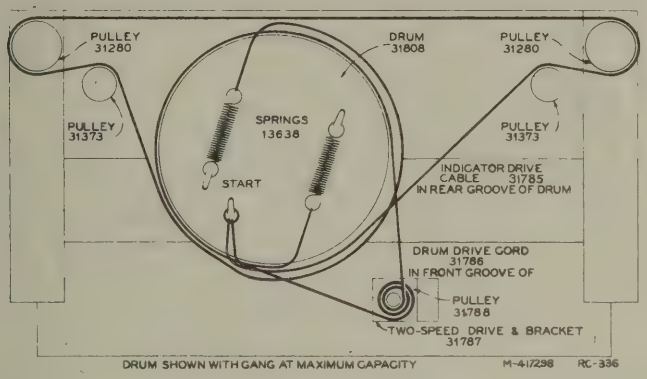
# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

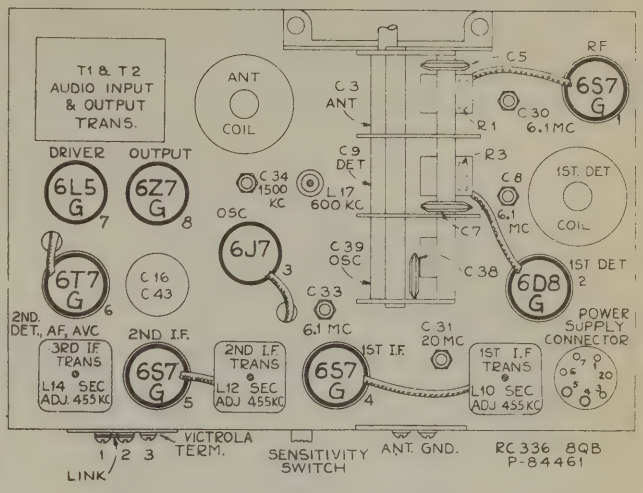
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.




*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*




*Top View, Showing Location of Tubes and Trimmers*

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark on the dial scales and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

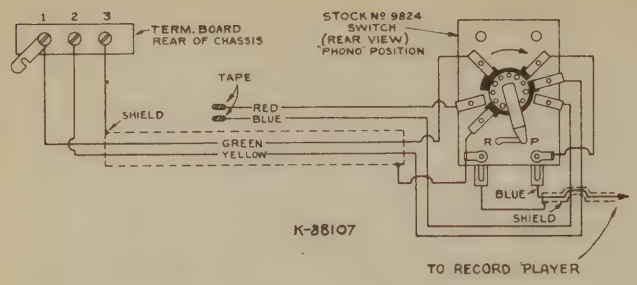
| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| Leave the sensitivity switch open (minimum sensitivity) during all alignment operations. | | | | |
| 1 | 6S7-G 2nd-I.F. grid cap, in series with .01 mfd. | 455 kc | "B" band, Quiet point. | L13 and L14 (3rd I-F Trans.) |
| 2 | 6S7-G 1st-I.F. grid cap, in series with .01 mfd. | | | L11 and L12 (2nd I-F Trans.) |
| 3 | 6D8-G 1st-det. grid cap, in series with .01 mfd. | | | L9 and L10 (1st I-F Trans.) |
| 4 | Antenna Terminal, in series with 300 ohms | 6.1 mc | 6.1 mc (29°) "B" band | C33 (osc.)* C8 (det.)† C30 (ant.) |
| 4A | Check to determine that C33 has been adjusted to correct peak by turning radio to 5.19 mc (50°), where a weaker signal should be received. | | | |
| 5 | Antenna Terminal, in series with 300 ohms | 20 mc | 20 mc (23.5°) "C" band | C31 (osc.)* |
| 5A | Check to determine that C31 has been adjusted to correct peak by turning radio to 19.09 mc (29.5°), where a weaker signal should be received. | | | |
| 6 | Antenna Terminal, in series with 200 mmf. | 1,500 kc | 1,500 kc (31°) "A" band | C34 (osc.)* |
| 7 | Antenna Terminal in series with 200 mmf. | 600 kc | 600 kc (144.5°) "A" band | L17 (osc.)†† |
| 8 | Repeat Step No. 6. | | | |

* Use **minimum** capacity peak (plunger out) if two peaks can be obtained.

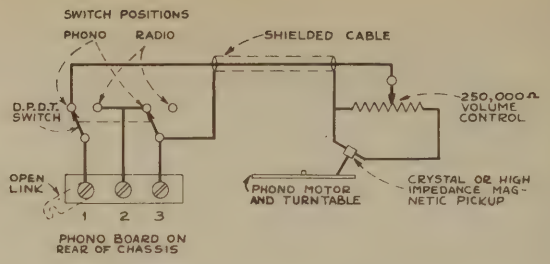
† Rock the gang condenser slightly while adjusting C8, and use **maximum** capacity peak if two peaks can be obtained.

†† Rock the gang condenser slightly while adjusting L17 for maximum output.

NOTE: The oscillator tracks 455 kc **above** the signal on all bands.




*Record Player Connections, Using a No. 9824 Switch*




*Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES (RC-336)** |
| 13216 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph input terminal board |
| 31785 | Cable—Indicator pointer drive cable |
| 31778 | Capacitor—Comprising one 8 mfd. and one 16 mfd. sections (C-16, C-43) |
| 12714 | Capacitor—Trimmer, 2-12 mmfd. (C-8, C-30, C-31, C-33, C-34) |
| 14392 | Capacitor—4.7 mmfd. (C-4) |
| 13001 | Capacitor—8.2 mmfd. (C-32) |
| 12896 | Capacitor—15 mmfd. (C-38) |
| 31791 | Capacitor—16 mmfd. (C-2) |
| 12723 | Capacitor—56 mmfd. (C-40) |
| 12720 | Capacitor—100 mmfd. (C-10) |
| 31270 | Capacitor—100 mmfd. (C-17, C-18) |
| 13003 | Capacitor—180 mmfd. (C-19) |
| 12694 | Capacitor—220 mmfd. (C-6) |
| 12952 | Capacitor—330 mmfd. (C-26) |
| 31790 | Capacitor—530 mmfd. (C-36) |
| 12537 | Capacitor—560 mmfd. (C-5, C-7) |
| 31552 | Capacitor—680 mmfd. (C-11, C-12, C-14, C-15) |
| 31792 | Capacitor—4,000 mmfd. (C-35) |
| 31405 | Capacitor—6,000 mmfd. (C-37) |
| 4838 | Capacitor—.005 mfd. (C-29, C-41, C-42) |
| 14393 | Capacitor—.01 mfd. (C-13, C-20, C-28) |
| 4870 | Capacitor—.025 mfd. (C-24) |
| 4886 | Capacitor—.05 mfd. (C-1, C-21, C-45) |
| 4839 | Capacitor—0.1 mfd. (C-22, C-23) |
| 12484 | Capacitor—0.25 mfd. (C-25, C-27, C-44) |
| 30867 | Capacitor—0.5 mfd. (C-46) |
| 31780 | Coil—Antenna coil and shield (L-1, L-2, L-3, L-4) |
| 31781 | Coil—R.F. coil and shield (L-5, L-6, L-7, L-8) |
| 31782 | Coil—Oscillator coil—"A" band only (L-17) |
| 31783 | Coil—Oscillator coil—"B" and "C" bands only (L-15, L-16) |
| 31774 | Condenser—3-gang variable tuning condenser (C-3, C-9, C-39) |
| 31786 | Cord—Variable condenser drive cord |
| 31787 | Drive—Two speed drive and bracket |
| 31808 | Drum—Variable condenser drive cord drum with calibrator scale |
| 11891 | Lamp—Dial lamp |
| 14028 | Nut—Jamb nut for capacitor, Stock 12714 |
| 31817 | Plate—Cushion socket mounting plate—less socket |
| 5119 | Plug—3-contact female plug for speaker cable |
| 14404 | Plug—7-contact plug for power input |
| 31280 | Pulley—Indicator drive cord pulley (large) |
| 31373 | Pulley—Indicator drive cord pulley (small) |
| 31788 | Pulley—Variable condenser drive cord pulley—fastens on two speed drive |
| 14837 | Resistor—1,000 ohms, 1/10 watt (R-5) |
| 30654 | Resistor—1,500 ohms, ½ watt (R-6) |
| 3526 | Resistor—2,200 ohms, ½ watt (R-19) |
| 31789 | Resistor—5,600 ohms, 1/10 watt (R-22) |
| 13302 | Resistor—10,000 ohms, 1/10 watt (R-2) |
| 5114 | Resistor—15,000 ohms, 1 watt (R-7) |
| 12070 | Resistor—18,000 ohms, 1/10 watt (R-12) |
| 11282 | Resistor—56,000 ohms, 1/10 watt (R-4) |
| 12010 | Resistor—68,000 ohms, 1/10 watt (R-15) |
| 14560 | Resistor—100,000 ohms, ½ watt (R-9, R-16) |
| 11281 | Resistor—100,000 ohms, 1/10 watt (R-18) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R-10) |
| 11397 | Resistor—560,000 ohms, 1/10 watt (R-21) |
| 12146 | Resistor—820,000 ohms, 1/10 watt (R-13) |
| 12013 | Resistor—1 meg., 1/10 watt (R-1, R-3, R-20) |
| 5028 | Resistor—1.8 meg., ½ watt (R-14) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R-8) |
| 14887 | Retainer—Retainer for pulley, Stock 31280 and 31373 |
| 4669 | Screw—No. 8-32 sq. head set screw for drum, Stock 14856, and pulley, Stock 31788 |
| 3950 | Shield—Tube shield |
| 31365 | Socket—Dial lamp socket |
| 31251 | Socket—Octal base tube socket |
| 13638 | Spring—Indicator drive cable, or variable condenser drive cord tension spring |
| 31775 | Switch—Range switch (S-1, S-2, S-3) |
| 30953 | Switch—S.P.S.T. sensitivity switch (S-6) |
| 31777 | Tone Control and power switch (R-17, S-4) |
| 31784 | Transformer—Driver and output transformer (T-1, T-2) |
| 31268 | Transformer—Third I.F. transformer (L-13, L-14, C-17, C-18) |
| 31779 | Transformer—First or second I.F. transformer (L-9, L-10, C-11, C-12) (L-11, L-12, C-14, C-15) |
| 31776 | Volume Control and dial light switch (R-11, S-5) |
| | **VIBRATOR POWER SUPPLY UNIT** |
| 12720 | Capacitor—100 mmfd. (C-2) |
| 31796 | Capacitor—.02 mfd. (C-4, C-5) |
| 12484 | Capacitor—0.25 mfd. (C-1, C-3, C-7) |
| 13046 | Capacitor—8 mfd. (C-6) |
| 14289 | Clip—Battery clips—one marked "+" and one unmarked |
| 12819 | Coil—Choke coil (L-4) |
| 31794 | Coil—Choke coil (L-1, L-3) |
| 5140 | Fuse—5-amp. |
| 14409 | Plug—7-contact female plug for power cable |
| 12262 | Resistor—680 ohms, ½ watt (R-1, R-2) |
| 4786 | Socket—Vibrator socket |
| 31793 | Transformer—Vibrator power transformer (T-1) |
| 31795 | Vibrator—Plug-in vibrator (L-5) |
| | **CV-110 A-C POWER SUPPLY UNIT** |
| 32015 | Capacitor—1 mfd. (C-2) |
| 32013 | Capacitor—Comprising 2 sections 16 mfd. each (C-1, C-3) |
| 14409 | Plug—7-contact plug for power output cable |
| 32014 | Reactor—Filter reactor (L-1) |
| 30880 | Resistor—150 ohms, ½ watt (R-1) |
| 31251 | Socket—Rectifier tube socket |
| 31998 | Transformer—Power transformer 105-130, 140-160, 200-250 volts, 25-60 cycles (T-1) |
| | **SPEAKER ASSEMBLIES** Model 8QB (Speaker RL-73-4) |
| 31310 | Cone—Speaker cone and voice coil (L-18) |
| 5118 | Plug—3-contact male plug for speaker |
| 31797 | Speaker complete |
| | Model 8QBK (Speaker RL-71-5) |
| 31275 | Cone—Speaker cone and voice coil (L-18) |
| 5118 | Plug—3-contact male plug for speaker |
| 31798 | Speaker complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31800 | Dial—Station selector dial scale and crystal |
| 31799 | Escutcheon—Dial escutcheon—less dial scale and crystal |
| 31801 | Indicator—Station selector indicator pointer complete with carriage and clip |
| 31802 | Knob—Station selector, range switch or tone control knob |
| 31803 | Knob—Volume control knob |
| 31287 | Rod—Indicator pointer slide rod |
| 31306 | Screen—Dial color screen and light diffuser |
| 12993 | Screw—No. 8-32 x ¼-in. headless set screw for knob, Stock 31803 |
| 14270 | Spring—Retaining spring for knob, Stock 31802 |
| 31558 | Stop—Indicator carriage spring stop |

# PSU 8A, 8B, 8C, 10A, 10B and 10C
# A-C Power Supply Units

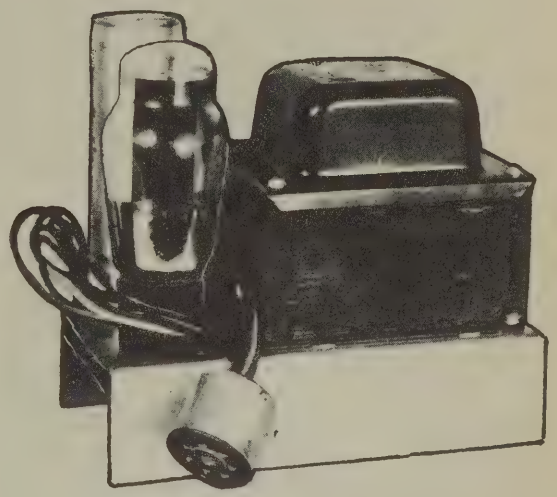
## General Description

Certain models of the "Q" Line of RCA Victor "Magic Brain" 1938 radio receivers are designed for use with a separate plug-in power supply unit. Different units are available to permit operation on a-c power supplies of various voltages and cycles, and also on 110 or 220 volts d-c.

Service data and diagrams for the a-c units are contained in this sheet: The d-c units are described in a separate sheet.

Each a-c unit is equipped with an 18-inch 6-wire cable with a 7-contact female receptacle which plugs into a 7-prong male connector on the receiver chassis. The a-c power cord is 6 feet long. The units are approximately 7½ inches long, 4¼ inches wide, and 6 inches high.

**Testing.**—To check an a-c power unit when a receiver is not available, connect a 50-watt resistor (4,800 ohms for PSU 8A, 8B, 8C, and 3,450 ohms for PSU 10A, 10B and 10C) across contacts 2 and 6 on the power receptacle. Connect a jumper across contacts 4 and 5. Measure the d-c voltage across the resistor, which should be approximately 375 volts, with 117 volts supply on the 117-volt tap.



## Specifications

| Type | Rating | | Radiotron Rectifier | D-C Output | Heater (A-C) | Used with Models | D-C Resis., T1 | | Net Weight (pounds) |
|---|---|---|---|---|---|---|---|---|---|
| | Voltage | Cycles | | | | | Pri. ohms Total | Sec. ohms Total | |
| PSU 8A | 105-125 | 50/60 | 5Y3-G | 375 volts at 78 milliamps | 6.45 V 3 amps | 8Q1 and 8Q4 | 6.4 | 535 | 7 |
| PSU 8B | 105-125 | 25/60 | | | | | 8.3 | 705 | 9½ |
| PSU 8C | Universal* | 50/60 | | | | | 17.4 | 455 | 11½ |
| PSU 10A | 105-125 | 50/60 | 5U4-G | 380 volts at 110 milliamps | 6.36 V 5 amps | 10Q1, 12Q4, 12QK, 12QU** | 3.0 | 250 | 9 |
| PSU 10B | 105-125 | 25/60 | | | | | 3.9 | 250 | 13 |
| PSU 10C | Universal* | 50/60 | | | | | 8.9 | 190 | 15 |

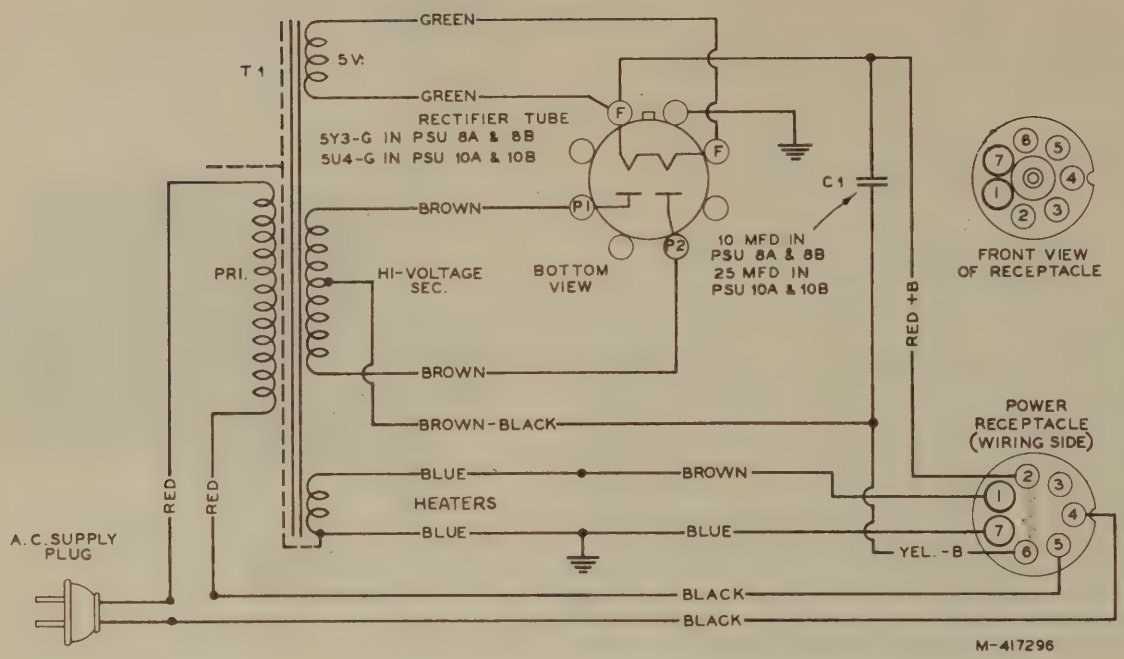
* The universal can be set for 105-117, 117-130, 140-160, 200-225, or 225-250 volt supply.
** Model 12QU has a phonograph motor designed for 50/60 cycle operation only, and uses either PSU 10A, or 10C.

## REPLACEMENT PARTS

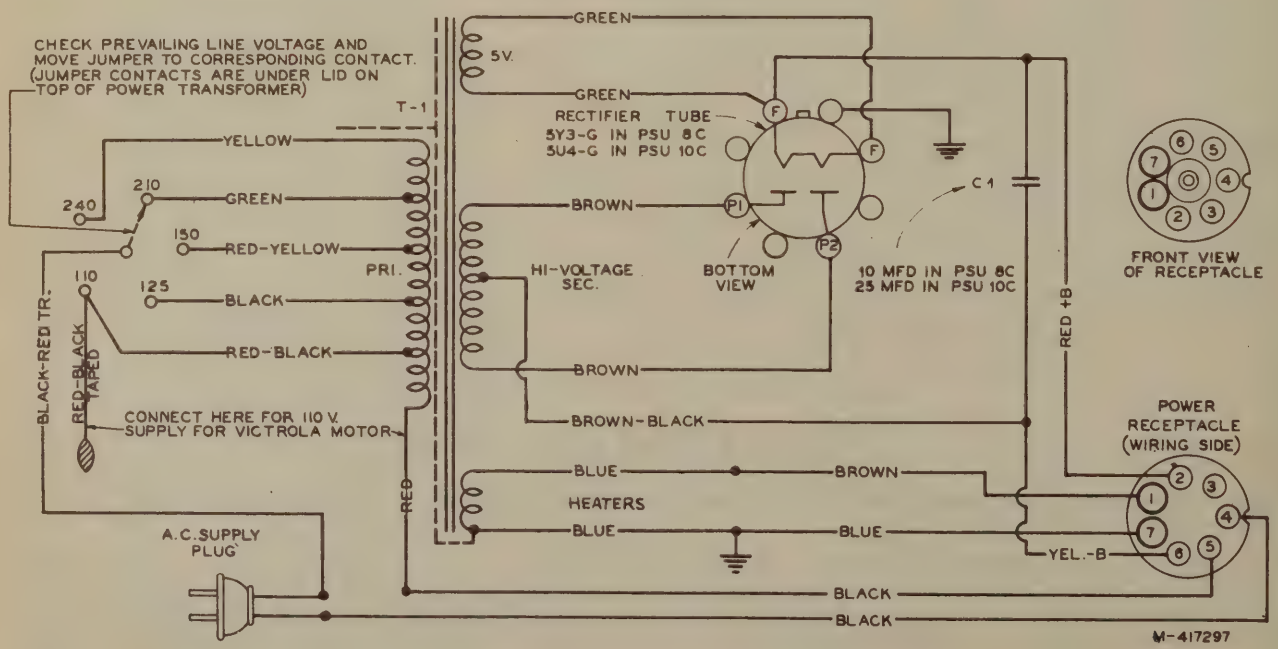
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| 31739 | Cable—6-conductor power output cable with plug | | 31734 | Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) (PSU 8B only) | |
| 11203 | Capacitor—10 mfd. (C1) (PSU 8A, 8B or 8C only) | | 31737 | Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) (PSU 10B only) | |
| 14531 | Capacitor—25 mfd. (C1) (PSU 10A, 10B or 10C only) | | 31735 | Transformer—Power transformer 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) (PSU 8C only) | |
| 14409 | Plug—7-contact plug for power output cable | | 31738 | Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) (PSU 10C only) | |
| 31251 | Socket—Rectifier tube socket | | | | |
| 31733 | Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) (PSU 8A only) | | | | |
| 31736 | Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) (PSU 10A only) | | | | |

# PSU 8A, -B, -C, 10 A, -B, -C



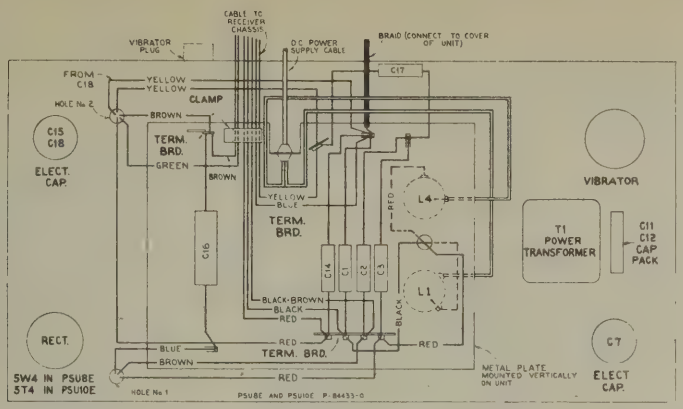

*Schematic Circuit Diagram of Power Supply Units PSU 8A, 8B, 10A, and 10B*




*Schematic Diagram of Power Supply Units PSU 8C and 10C*

# PSU 8E and 10E

# D-C Power Supply Units




*At Left—*

*Top View of D-C Power Unit*

Each d-c unit is equipped with an 18-inch 7-wire cable, with a 7-contact female receptacle which plugs into a 7-prong male connector on the receiver chassis. The d-c power cord (double conductor) is 6-feet long and is provided with a fused plug. The units are approximately 12¼-inches long, 5¼-inches wide, and 8¼-inches high.

**GOOD GROUND IS ESSENTIAL.**—It is necessary to provide a good ground connection to the receiver chassis. The ground lead should be heavy wire, as short as possible, connected to a water pipe by means of an approved ground clamp. If a water pipe ground is not available, a buried metal plate or screen may be used. This should have an area of approximately 20 square feet and should be buried one or two feet in moist ground. The connection to the plate should be electrically good, mechanically solid, and permanent.

**Grounding Power Supply Unit.**—A flexible metal braid is connected from the PSU chassis to the case of the unit, and another length of braid extends from the case for connection to the receiver chassis. Loosen one of the self-tapping screws on the rear of the chassis, and attach the braid under this screw. It is important to see that these connections are made correctly at the time of installation.

**Magic Wave Antenna Recommended.**—In cases where the line or vibrator interference is found to be objectionable, the use of an RCA Magic Wave Antenna (Stock No. 9812) is recommended in conjunction with a good ground as specified above.

**Link Board for Changing from 117 to 234 Volts.**—A link board is mounted under the chassis of the PSU for making connections to permit operation on 105-125 volts d.c., or on 210-250 volts d.c. The correct position of the links for each voltage range is shown in the schematic diagram. The links must be arranged correctly in the link board for the particular voltage range on which the unit is to be operated, otherwise damage to the receiver may result.

**Vibrator Plug.**—The heater windings on the power transformer are tapped and connected to a six-contact socket on the rear of the PSU chassis. A plug fits into this socket in two positions only. An arrow on the plug points to markings "NEW" or "OLD" on the case of the unit. When the vibrator is new, the plug is inserted with the arrow pointing to "NEW." In the course of time, when the vibrator is worn to an extent where the dial lights burn dull or red instead of with their usual brilliancy, the plug should be removed and re-inserted with the arrow pointing to "OLD." (In this position, all the turns of the heater windings are connected, thus bringing the heater voltage up to normal.)

The number of operating hours to the time when it is necessary to turn the plug to "OLD" is not an indication of the ultimate life of the vibrator: For example, with high line voltage, the plug may usually be left at "NEW" for practically the entire useful life of the vibrator; but with low line voltage, it may be necessary to turn the plug to "OLD" after a time corresponding to a small fraction of the total life of the vibrator.

**Testing.**—The simplest way to check PSU 8E or 10E is to plug it into a receiver for which it is designed. (First check the position of the links for the particular line voltage.) Note whether the dial lamps in the receiver light with normal brilliancy, and measure the rectified "B" voltage at the receiver to determine whether it is normal.

If a receiver is not available, dummy loads may be connected to the unit as specified in the table below.

The supply current must be measured with a d-c ammeter, not a meter of the ac-dc type, inasmuch as the r.m.s. value of the current is considerably higher than the d-c current. The heater voltage must be measured with an r.m.s. meter (thermo-coupled), not with an average meter (rectifier type), on account of the square wave shape. If an accurate thermo-coupled meter is not available, the heater voltage may be checked by observing the brilliancy of the dial lamps in the receiver. They will glow dull or red if the heater voltage is low.

Precautionary Lead Dress. — (1) Dress all leads on the power transformer primary and the buffer capacitors away from the line chokes. (2) Leads to C19 must be as short as possible. (3) The rectifier filament leads should be run close to each other, and dressed away from the filter chokes. (4) D-C power cord must not touch power transformer. (5) Keep antenna and ground leads away from PSU and PSU cables.

| PSU | Supply Volts DC | Heater Load (ohms) | Rectifier Load (ohms) | Supply Current D-C amps. | Heater Voltage (A.C.) | | Rectified Voltage (D.C.) | | Used With Models |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Max. | Min. | Max. | Min. | |
| 8E | 117 | 2.2 | 4,900 | 0.90 | 7.85 | 7.1 | 400 | 360 | 8Q1, and 8Q4 |
| | 234 | 2.2 | 4,900 | 0.50 | 7.85 | 7.1 | 400 | 360 | |
| 10E | 117 | 1.4 | 3,400 | 1.10 | 7.4 | 6.6 | 400 | 360 | 10Q1, 12Q4, 12QK |
| | 234 | 1.4 | 3,400 | .65 | 7.4 | 6.6 | 400 | 360 | |

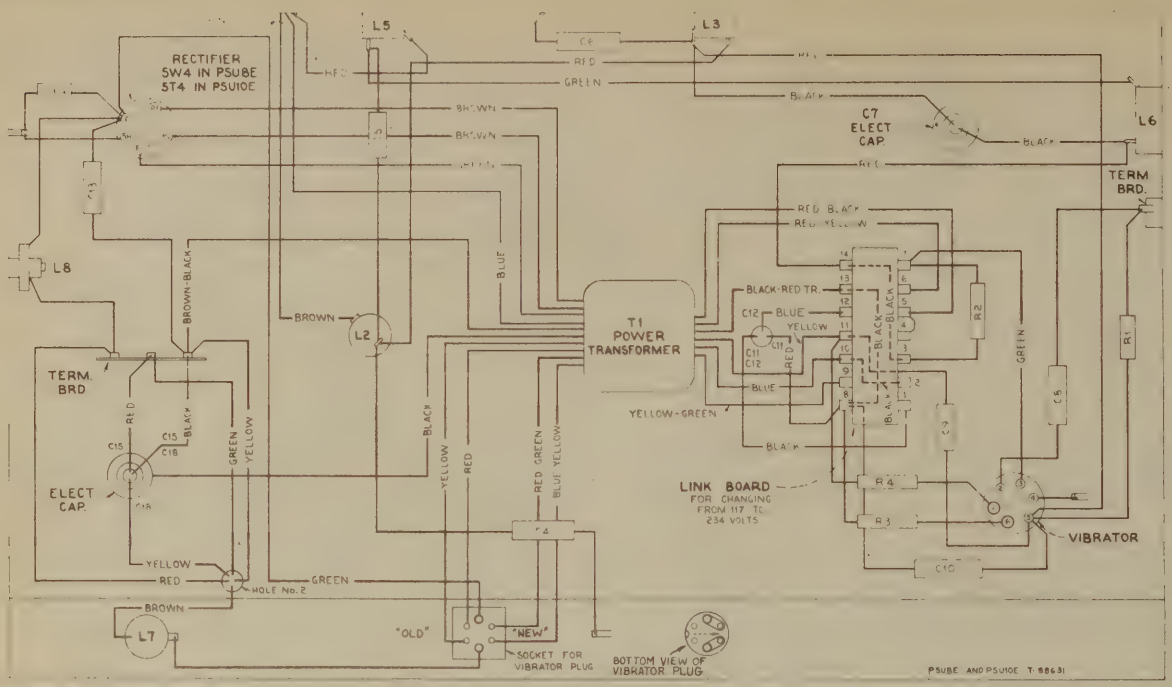
NOTE: The heater and rectifier dummy load resistors should be capable of handling 50 watts. Connect the heater load across terminals 1 and 7 on the 7-contact plug. Connect the rectifier load resistor across terminals 2 and 6 on the 7-contact plug. Connect a jumper from terminal 2 to 3, and from 4 to 5 on this plug. Check position of links before turning power on.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | STOCK No. | DESCRIPTION |
|---|---|---|---|
| | DC POWER SUPPLY (PSU-8E and PSU-10E) | 32053 | Coil—Choke coil (L8) |
| | | 5140 | Fuse—5 amp. fuse |
| | | 30557 | Plug—Fused plug less fuses and power cord |
| 12952 | Capacitor—330 mmfd. (C19) | 32052 | Plug—6-contact power change plug |
| 4937 | Capacitor—.01 mfd. (C9, C10) | 14409 | Plug—7-contact female plug for power supply cable |
| 14626 | Capacitor—.07 mfd. (C13, C14, C17) | | |
| 4839 | Capacitor—0.1 mfd. (C8) | 32064 | Resistor—0.47 ohms, flexible type (R3, R4) |
| 12484 | Capacitor—0.25 mfd. (C1, C2, C3, C4, C5, C6) | 4687 | Resistor—1,000 ohms, ½ watt (R1) |
| 32049 | Capacitor—Comprising two sections of 0.5 mfd. each (C11, C12) | 11768 | Resistor—4,700 ohms, 2 watt (R2) |
| | | 32051 | Socket—6-contact power change socket |
| 32048 | Capacitor—5 mfd. (C7) | 31251 | Socket—Tube socket |
| 32047 | Capacitor—Comprising one section 10 mfd. and one section 20 mfd. (C15, C18) | 14312 | Socket—Vibrator socket |
| | | 32062 | Transformer—Power transformer (PSU-8E only) |
| 32045 | Capacitor—15 mfd. (C16) | 32063 | Transformer—Power transformer (PSU-10E only) |
| 32046 | Coil—Choke coil (L1, L2, L3, L4, L5, L6) | | |
| 31794 | Coil—Choke coil (L7) | 32050 | Vibrator |

# PSU 8E & 10E




**Recommended Changes:**

(a) Replace paper condensers, Stock No. 32049 (C-11 and C-12) on the earlier models with a new type oil capacitor now carried under the same stock number and incorporated in units of later production.

(b) The transformer primary leads should be reversed so that the black with red tracer lead goes through R-3 to terminal No. 1 on the vibrator socket and the yellow lead through R-4 to terminal No. 6 of the vibrator socket.

(c) An insulative sheet is to be added to the bottom cover under the 4,700 ohm (R-2) resistor.

(d) Precaution should be taken to dress parts and leads to clear chassis and bottom cover.

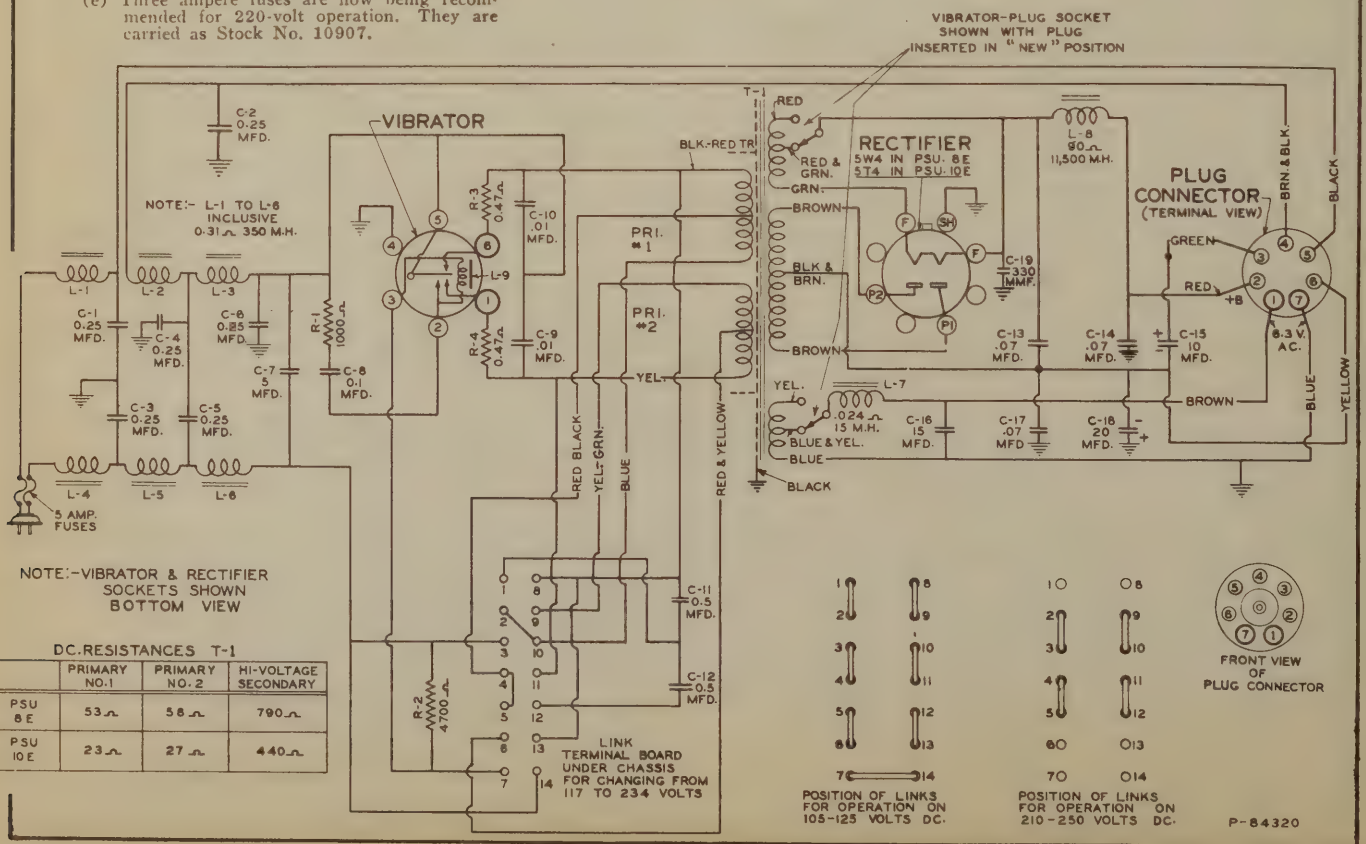
(e) Three ampere fuses are now being recommended for 220-volt operation. They are carried as Stock No. 10907.

***Above—***

*Bottom View of D-C Power Unit*

***Below—***

*Schematic Diagram*




DC. RESISTANCES T-1

| | PRIMARY NO.1 | PRIMARY NO.2 | HI-VOLTAGE SECONDARY |
|---|---|---|---|
| PSU 8E | 53Ω | 58Ω | 790Ω |
| PSU 10E | 23Ω | 27Ω | 440Ω |

# MODEL U-8

## Chassis No. RC-404A

## Five-Tube, Single-Band, A-C, Superheterodyne Victrola

### Electrical Specifications

FREQUENCY RANGE ..... 540-1,720 kc
INTERMEDIATE FREQUENCY ..... 455 kc

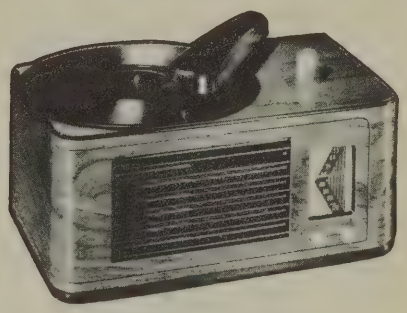
TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-35L6GT ..... Power Output
(5) RCA-35Z5GT ..... Half-Wave Rectifier
Dial Lamp (1) ..... Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS
A-5 ..... 105-125 volts, 50 cycles, 40 watts
A-6 ..... 105-125 volts, 60 cycles, 40 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted ..... .75 watts
Maximum ..... 1.3 watts

LOUDSPEAKER
Type ..... 5-inch Electrodynamic
Voice-Coil Impedance ..... 3.4 ohms at 400 cycles

PHONOGRAPH ..... Synchronous (manual starting)
Records ..... 10-inch and 12-inch, 78 r.p.m.
Pickup ..... Crystal, 100,000 ohms at 1,000 c.p.s.
Average Output of Pickup ..... 1½ volts at 1,000 c.p.s. across ½ meg. load



*Model U-8W*
*Walnut Finish*
*Model U-8M*
*Blonde Mahogany Finish*

Additional Replacement Parts:

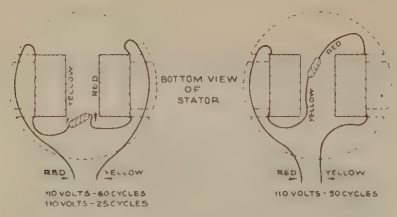
| Stock No. | |
|---|---|
| 34758 | Bushing—1 rubber, and 1 metal, for pickup arm |
| 34374 | Cone—Speaker cone and voice coil |

### Replacement Parts

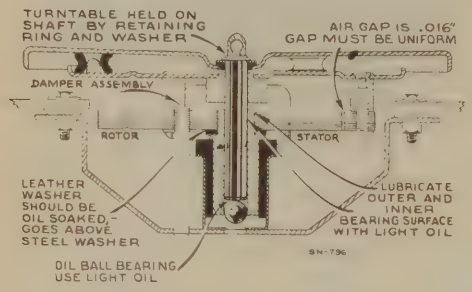
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 12488 | Capacitor—250 mmfd. |
| 12952 | Capacitor—300 mmfd. |
| 4838 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 33736 | Coil—Antenna coil |
| 32962 | Coil—Oscillator coil |
| 13057 | Condenser—60 mmfd. |
| 30433 | Condenser—400 mmfd. |
| 30303 | Condenser—.0035 mfd. |
| 33584 | Condenser—.005 mfd. |
| 4870 | Condenser—.025 mfd. |
| 4839 | Condenser—0.1 mfd. |
| 12536 | Condenser—820 mfd. |
| 32576 | Condenser—Electrolytic, one section 20 mfd., one section 12 mfd. |
| 32968 | Condenser—2-gang variable tuning |
| 32634 | Cord—Drive cord |
| 33289 | Dial—Glass dial scale |
| 33297 | Drive—Dial drive mechanism—comprising drive drum, cord, shaft, dial color plate, back plate and pulleys assembled |
| 33006 | Feet—Rubber feet |
| 33295 | Indicator—Dial pointer |
| 32571 | Knob—Tan knob (tuning or volume) |
| 11765 | Lamp—Dial lamp—Mazda 51 |
| 31193 | Lead—Antenna lead |
| 33292 | Plate—Dial color plate |
| 33294 | Pulley—Drive cord pulley |
| 33558 | Resistor—86 ohms |
| 13428 | Resistor—150 ohms, ½ watt |
| 30538 | Resistor—330 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 33464 | Shaft—Tuning knob shaft and bearing |
| 32969 | Socket—Dial lamp socket |
| 32537 | Socket—Tube socket |
| 32803 | Spring—Dial knob spring |
| 31615 | Spring—Drive cord tension spring |
| 33296 | Spring—Drive drum retaining spring |
| 32667 | Spring—Knob or drive drum retaining spring |
| 32966 | Transformer—First i-f transformer |
| 32967 | Transformer—Second i-f transformer |
| 33465 | Transformer—Output transformer |
| 33504 | Volume control and power switch |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33121 | Arm—Pickup arm complete—less crystal cartridge |
| 33592 | Base—Pickup arm base and pivot arm |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 33123 | Damper—Viscoloid damper for pickup armature |
| 33529 | Screw—Pickup needle screw |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES** |
| 31045 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Rotor bearing |
| 33353 | Cap—Turntable spindle cap (rubber) |
| 33357 | Coil—Motor field coil—105-120 volts, 25 cycle |
| 31918 | Coil—Motor field coil—105-120 volts, 50 cycle |
| 31917 | Coil—Motor field coil—105-120 volts, 60 cycle |
| 31040 | Cushion—One set rubber cushion for turntable mounting |
| 31047 | Cushion—Rubber cushion for rotor bearing |
| 33941 | Frame—Motor frame and spindle—60 cycle |
| 33641 | Lamination—Rotor lamination—60 cycle |
| 33358 | Lamination—Stator laminations—25 cycle |
| 33354 | Lamination—Stator laminations—less coil 50 cycle |
| 33355 | Motor—105-120 volts, 25 cycle |
| 33351 | Motor—105-120 volts, 50 cycle |
| 33940 | Motor—105-120 volt, 60 cycle |
| 32075 | Ring—Lead ring for turntable—25 cycle |
| 33041 | Ring—Retaining ring and washer for spindle cap |
| 33356 | Rotor—Rotor frame, laminations, and spindle shaft assembled—25 cycle |
| 33352 | Rotor—Rotor frame, laminations, and spindle shaft assembled—50 cycle |
| 31036 | Rotor—Turntable and rotor lamination for 60 cycle operation |
| 31042 | Stator—Stator assembly comprising coils and laminations for 60 cycle operation |
| 32076 | Turntable—Finished turntable plate only—25 cycle |
| 31039 | Turntable—Finished turntable plate only—50 cycle |
| 4083 | Washer—Leather Washer |
| 33348 | Washers—Leather and metal washers for stator bearing |
| 14231 | Washer—Metal spacing washer |
| 32074 | Weight—One upper and one lower weight for stator—25 cycle (2 each required) |
| | **SPEAKER ASSEMBLIES (RL—78—4)** |
| 32907 | Cap—Cone dust cap |
| 33809 | Coil—Speaker field coil |
| 33466 | Speaker complete (no output transformer) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33467 | Control—Tone control and Radio-Record switch |
| 33289 | Dial—Glass dial scale |
| 30863 | Knob—Tone control knob |
| 32895 | Knob—Tuning or volume control knob |
| 33530 | Mounting—Pickup arm rubber cushion, washer and nut |
| 30870 | Plug—2-prong plug for motor leads |
| 32610 | Rest—Pickup arm rest |




*Motor Coil Assembly and Connections*


TURNTABLE HELD ON SHAFT BY RETAINING RING AND WASHER
AIR GAP IS .016" GAP MUST BE UNIFORM
DAMPER ASSEMBLY
ROTOR
STATOR
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER
LUBRICATE OUTER AND INNER BEARING SURFACE WITH LIGHT OIL
OIL BALL BEARING USE LIGHT OIL
SN-796

*Cross Section of Motor Assembly*

## Phonograph Service Data

The motor is started by turning the radio-phono tone control to either 3rd or 4th position clockwise and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

**Hum and Vibration.**—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**Antenna.**—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

### Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against chassis apron.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | Tuning condenser stator (osc.) in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna term. of ant. trans. in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C6 (antenna) |

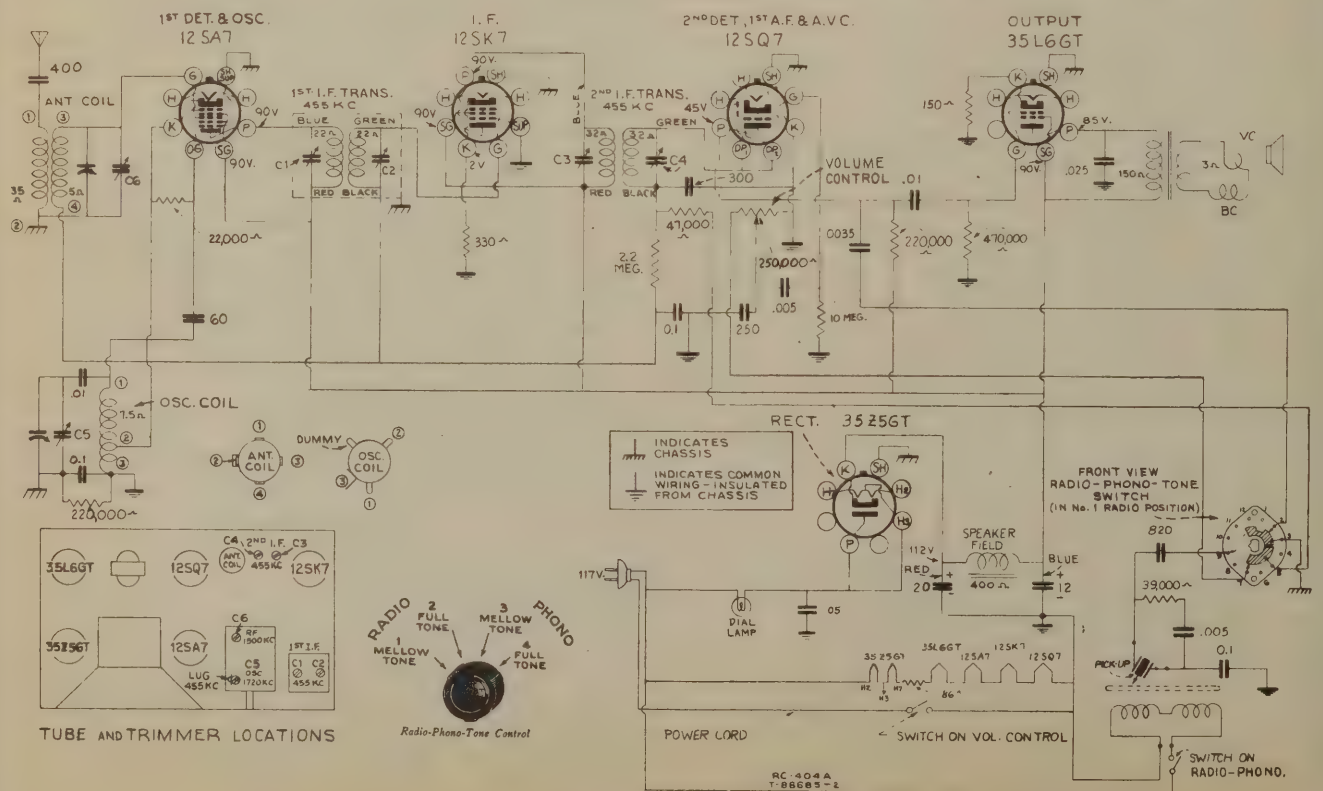
**Power Supply.**—Although this model employs an ac-dc chassis, it is not suitable for use on dc, as this would damage the motor.

**5. The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.**

**Removing Rotor.**—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting up.

**Rotor Adjustment.**—Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

**Lubrication.**—Oiling points are indicated in the diagram.




*Schematic Circuit Diagram*




TUBE AND TRIMMER LOCATIONS

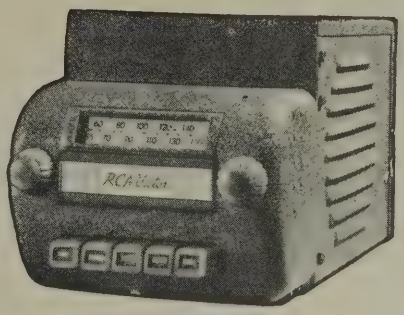



*Radio-Phono-Tone Control*

# MODELS 9M1 and M50

Chassis No. RC 357 RC 357J

## Five-Tube, Push-Button, Superheterodyne Automobile Receiver



MODEL 9M1

MODEL M 50

## Electrical Specifications

TUBES AND FUNCTIONS

| | |
|---|---|
| 6A8 | First Detector—Oscillator |
| 6K7 | I-F Amplifier |
| 6Q7 | Second Det., A-F Amp. and A.V.C. |
| FREQUENCY RANGE | 550-1,550 kc |

POWER OUTPUT

| | |
|---|---|
| Type | Pentode |
| Undistorted | 2.1 watts |
| Maximum | 4.1 watts |

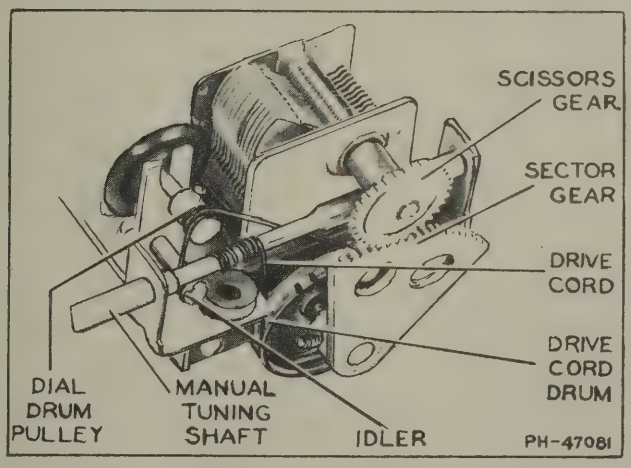
POWER SUPPLY

| | |
|---|---|
| "A" | 6.3 volt Auto Storage Battery |
| "B" | Non-Synchronous Vibrator |
| Current Drain 9M1 | 6.75 amps. |
| Current Drain M50 | 6.0 amps. |

| 9M1 M50 | |
|---|---|
| 6F6 - 6K6GT | Output |
| 6X5 - 0Z4G | Rectifier |
| Dial Lamp | 6-8 volts, 0.2 amp., Mazda 51 |

LOUDSPEAKER

| | |
|---|---|
| Type | Electrodynamic |
| Size | 5 inches |
| V.C. Impedance | 3.2 ohms at 400 cycles |
| Field Coil Resistance | 5 ohms |
| App. Field Coil Voltage Drop | 6 volts |




*Tuning Mechanism*

### Antenna Circuit

The antenna circuit is designed to work with a low capacity antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If larger antennas, such as screened top or a double under the running-board having a total capacity of 200 to 550 mmf. is to be used, it will be necessary to reduce the value of the antenna coupling capacitor C-2 from .01 to approximately 200 mmf. (.0002). For even larger antennas such as insulated steel tops, a correspondingly smaller value of C-2 (approximately 125 to 150 mmf.) should be used keeping in mind to use the largest value possible with which the antenna circuit can be aligned.

After installation, and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer (C-3) for maximum signal output. This trimmer is accessible by prying off the nameplate between the control knobs.

### Antenna Filter

A filter is included in the antenna circuit. Being completely shielded, it prevents radiating ignition interference within the set. It also reduces the possibility of picking up vibrator interference. The filter unit is mounted inside a steel shell which in turn is welded to the chassis. The shielded antenna lead-in makes contact with the filter unit within the steel shell and is held in place by a bayonet type connector.

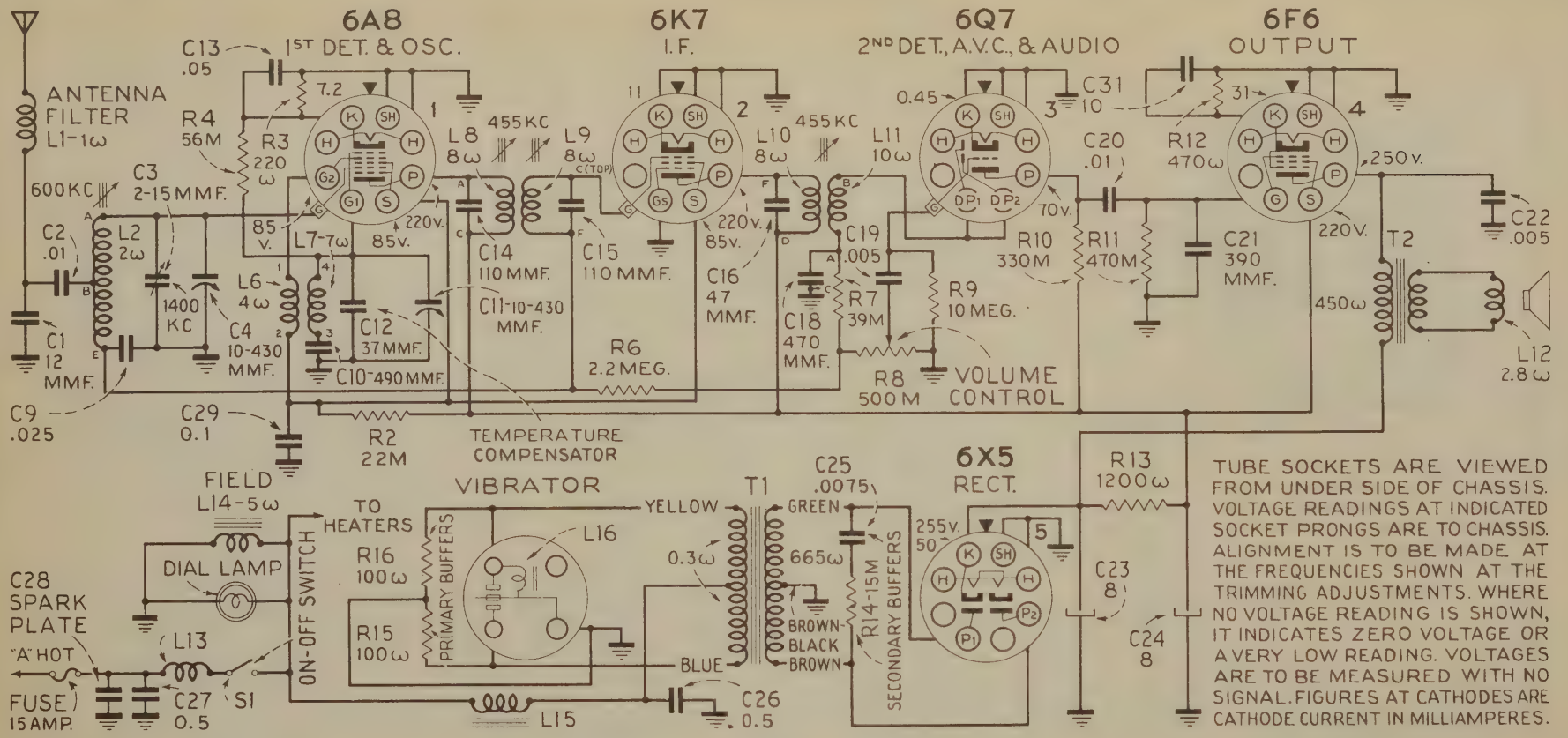
## Push Button Tuning Mechanism

**Care should be used when locking screws are tightened not to use excessive force as the threads may become damaged or stripped.**

### Adjustments

The mechanism should be adjusted so that when using either manual or push-button tuning, it operates positively and without backlash or bind. The following hints will be found helpful in adjusting the mechanism properly.

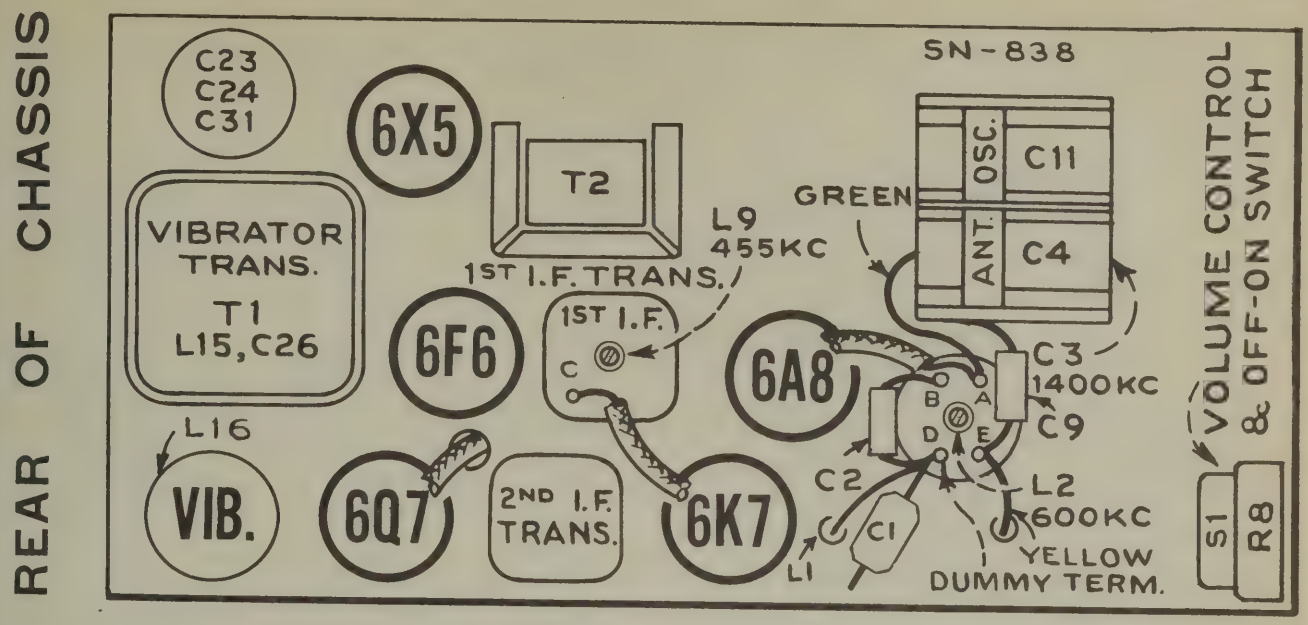
1. With the gang condenser in full mesh, the sector gear should have the two end teeth fully meshed in the scissor gear.
2. The position of the sector gear on the rocker-plate shaft should be adjusted so that there is clearance between the rocker-plates and the frame of the push-button mechanism at both extremities of gang rotation. Thus correct adjustment prevents the rotation of the gang being limited by the rocker plates touching the frame.
3. The drive cord should have 8½ turns around the tuning shaft as shown in the illustration. Three degrees of adjustment of the tension on the drive cord may be obtained by use of the three positions for connecting the drive-cord-tension spring to the drive-cord drum on the condenser shaft as shown.
4. The push-arms, rocker-plate shaft, and pulleys should be lubricated with light grease (sparingly). Care should be taken to keep the lubricant off the drive cord.




*Schematic Circuit Diagram* **MODEL 9M1**

**MODEL M-50 IS IDENTICAL ELECTRICALLY TO MODEL 9M1 WITH THE FOLLOWING EXCEPTIONS:**

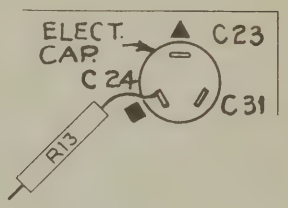
$L_9$ is 10 ohms, $C_{15}$ is 56 mmfd.
$C_{22}$ is shunted across the output transformer primary.
$C_{23}$ and $C_{24}$ are 10 mfd. each.
$C_{31}$ is 20 mfd.
The output tube is a type 6K6GT.
The rectifier tube is a type $0Z_4G$.

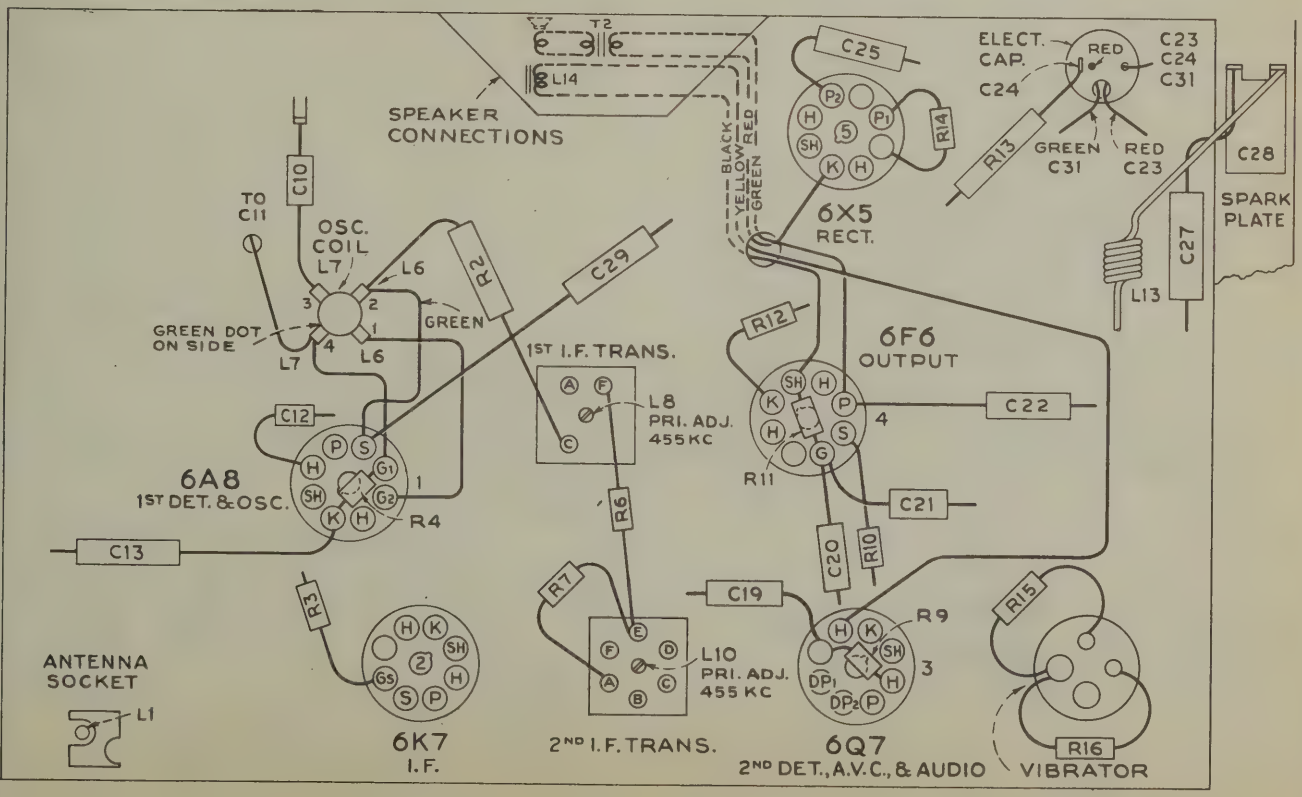



*Location of Parts and Alignment Adjustments on Top of Chassis* MODEL 9M1

MODEL M-50 IS IDENTICAL WITH THESE EXCEPTIONS:

6X5 IS CHANGED TO 0Z4G
6F6 IS CHANGED TO 6K6GT
ELECTROLYTIC CAPACITOR CONNECTIONS AS ILLUSTRATED AT RIGHT




*Location of Parts and Alignment Adjustments on Bottom of Chassis* MODEL 9M1

# Alignment Procedure

PRELIMINARY:

Output meter connections ..... Across speaker voice coil
Output meter readings to indicate 1 watt ..... 1.8 volts
Generator ground lead connections ..... To chassis
Dummy antenna value to be in series with generator output ..... See Chart Below
Connection of generator output lead ..... See Chart Below
Generator modulation ..... 30%, 400 cycles
Position of Volume Control ..... Fully clockwise
Chassis must be in its case with front end removed, when aligning R-F circuit.

| Position of Dial Pointer | Generator Frequency | Dummy Antenna | Generator Connection | Adjustment Symbol | Circuit Adjusted |
|---|---|---|---|---|---|
| No Signal 550-750 kc | 455 kc | .001 mfd. | 6K7 Grid | L-10 | 2nd I.F. Trans. |
| No Signal 550-750 kc | 455 kc | .001 mfd. | 6A8 Grid | L-8, L-9 | 1st I.F. Trans. |
| 1,400 kc | 1,400 kc | .0001 mfd. † | Ant. Lead | C-3 | Ant. |
| 600 kc | 600 kc | .0001 mfd. † | Ant. Lead | L-2 | Ant. |
| 1,400 kc | 1,400 kc | .0001 mfd. † | Ant. Lead | C-3 * | Ant. |

NOTE: No oscillator alignment adjustments are required in this receiver.

## IMPORTANT ALIGNMENT NOTES.

† Make the generator connection to the receiver thru a shielded lead-in having not more than 50 mmf. (.00005) capacity with a male connector attached for connection to antenna socket. If C-2 has been changed, as outlined under "Antenna Circuit," for reason of a high capacity antenna, the Dummy Antenna should be the same value as the antenna itself.

* Re-adjust C-3 after installation as outlined under "Antenna Circuit"

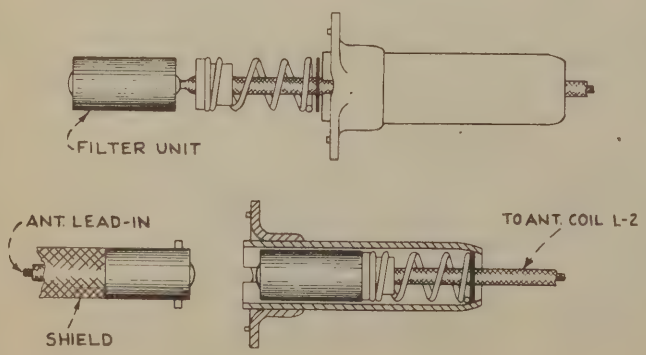
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.

Alignment adjustment locations are shown on the top and bottom parts location views of chassis.

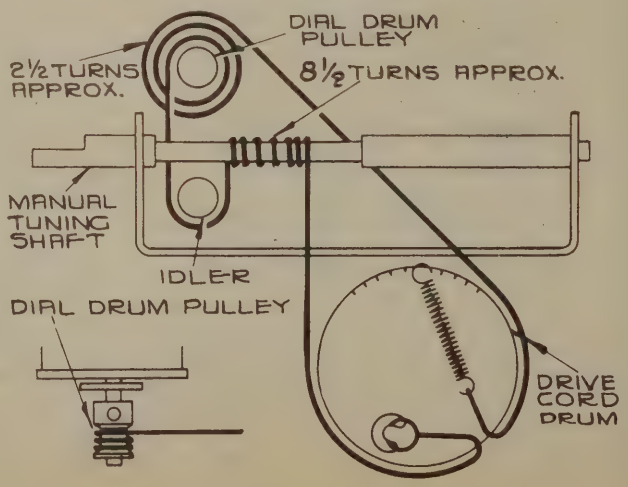
Only the dummy antenna indicated in the chart for any particular frequency should be used. Grid cap leads should remain in place during alignment.

Oscillator circuit alignment is not required in this receiver at either end of the band; the oscillator coil is pre-adjusted for inductance in the factory.

Since the oscillator coil is unshielded, the case has some effect on its inductance. Therefore alignment must be done either with the chassis in the case or with a steel plate (covering the bottom of chassis), substituting for the case.




*Antenna Filter*




*Drive Cord Hookup*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **9M1 RECEIVER ASSEMBLIES** |
| 13002 | Capacitor—12 mmfd. (C1) |
| 31728 | Capacitor—37 mmfd. (C12) |
| 12405 | Capacitor—47 mmfd. (C16) |
| 14262 | Capacitor—110 mmfd. (C14, C15) |
| 13894 | Capacitor—390 mmfd. (C21) |
| 30675 | Capacitor—470 mmfd. (C18) |
| 31726 | Capacitor—490 mmfd., temp. coeff. (C10) |
| 4838 | Capacitor—.005 mfd. (C19, C22) |
| 30626 | Capacitor—.0075 mfd. (C25) |
| 14393 | Capacitor—.01 mfd. (C2, C20) |
| 4870 | Capacitor—.025 mfd. (C9) |
| 30882 | Capacitor—.05 mfd. (C13) |
| 4839 | Capacitor—0.1 mfd. (C29) |
| 12741 | Capacitor—0.5 mfd. (C27) |
| 31598 | Capacitor—Comprising two 8 mfd., and one 10 mfd. sections (C23, C24, C31) |
| 31596 | Clip—Spring clip to hold oscillator coil |
| 31766 | Coil—Antenna coil less shield (L2) |
| 31977 | Coil—Antenna filter (L1) |
| 31594 | Coil—Oscillator coil (L6, L7) |
| 11765 | Lamp—Dial lamp |
| 30641 | Lead—Ammeter lead (chassis end), complete with male section of fuse holder |
| 30540 | Resistor—100 ohms, ½ watt (R15, R16) |
| 14561 | Resistor—220 ohms, ½ watt (R3) |
| 30499 | Resistor—470 ohms, ½ watt (R12) |
| 6134 | Resistor—1,200 ohms, 1 watt (R13) |
| 12695 | Resistor—15,000 ohms, ½ watt (R14) |
| 13669 | Resistor—22,000 ohms, 2 watt (R2) |
| 12266 | Resistor—39,000 ohms, ½ watt (R7) |
| 12286 | Resistor—56,000 ohms, ½ watt (R4) |
| 14983 | Resistor—330,000 ohms, ½ watt (R10) |
| 12285 | Resistor—470,000 ohms, ½ watt (R11) |
| 12679 | Resistor—2.2 meg., ½ watt (R6) |
| 13601 | Resistor—10 meg., ½ watt (R9) |
| 13471 | Ring—Retaining ring for coil, Stock No. 31766 |
| 31639 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 13686 | Socket—Vibrator socket |
| 14376 | Transformer—First i-f transformer (L8, L9, C14, C15) |
| 30672 | Transformer—Second i-f transformer (L10, L11, C16, C18) |
| 31597 | Transformer—Vibrator power transformer (T1, L15, C26) |
| 13688 | Vibrator—Plug-in vibrator complete (L16) |
| 31637 | Volume control and power switch (R8, S1) |
| | **9M1 TUNING UNIT ASSEMBLIES** |
| 31604 | Condenser—2-gang variable condenser (C3, C4, C11) |
| 31614 | Cord—Variable condenser drive cord |
| 31725 | Drum—Indicator drum assembly |
| 31610 | Drum—Variable condenser drive cord drum |
| 31612 | Gear—Variable condenser drive gear sector—fastens on cam shaft |
| 31645 | Mechanism—Comprising 5-push button levers and cams, cam plate, and variable condenser mounting bracket, assembled |
| 31606 | Pulley—Indicator drum pulley |
| 31607 | Pulley—Pulley for indicator drum bracket |
| 4389 | Screw—No. 6-32 x 3/16-in. set screw for pulley, Stock No. 31606 |
| 31613 | Screw—No. 8-32 x ¼-in. set screw for gear, Stock No. 31612 |
| 31611 | Screw—No. 8-32 x ¼-in. set screw for drum, Stock No. 31610 |
| 31609 | Shaft—Station selector knob shaft |
| 31615 | Spring—Variable condenser drive cord tension spring |
| 30585 | Spring—Push button arm tension spring |
| 2917 | Washer—"C" washer to hold knob shaft |
| 31608 | Washer—"C" washer to hold pulley, Stock No. 31607 |
| | **SPEAKER ASSEMBLIES (Speaker 84391-1)** |
| 35913 | Cone—Speaker cone and voice coil (L12) |
| 30781 | Speaker—Complete |
| 30783 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES (Speaker 84391-3)** |
| 31771 | Cone—Speaker cone and voice coil (L12) |
| 31770 | Speaker—Complete |
| 31772 | Transformer—Output transformer (T2) |

| STOCK No. | DESCRIPTION |
|---|---|
| | **9M1 MISCELLANEOUS ASSEMBLIES** |
| 4289 | Body—Fuse holder body for ammeter lead |
| 31656 | Button—Push button |
| 5025 | Capacitor—Generator capacitor |
| 31653 | Case—Complete receiver case only—less name plate, and dial scale |
| 4291 | Clip—Spring clip for ammeter lead |
| 31456 | Covers—8-protective celluloid covers for call letter markers |
| 31654 | Dial—Dial scale and holder |
| 4286 | Ferrule—Bushing and ferrule for fuse holder |
| 5023 | Fuse—15 amp |
| 4290 | Insulator—Insulating sleeve for fuse holder |
| 31658 | Knob—Station selector or volume control knob |
| 7766 | Lead—Ammeter lead complete with clip and fuse holder |
| 31589 | Markers—One set call letter markers for push buttons |
| 31662 | Mounting—Complete set of mounting brackets, strap, washers, screws, bolts, and nuts |
| 31660 | Plate—Name plate |
| 31646 | Spring—Retaining spring for knobs |
| 4284 | Spring—Spring for fuse holder |
| 5024 | Suppressor—Distributor suppressor |
| 4285 | Washer—Insulating washer for fuse holder |

**Additional Replacement Part:**

Stock No.

32510 Screw—Cam locking screw for tuning unit assembly

34053 Spring—Push-button retaining spring

**REPLACEMENT PARTS MODEL M-50**
**REFER TO MODEL 9M1 PARTS LIST ABOVE**

*Add stock no.*

| | |
|---|---|
| 12829 | Capacitor - 56 mmfd. (C15) |
| 33584 | Capacitor - 0.005 mfd. (C19, C22) |
| 4937 | Capacitor - 0.01 mfd. (C2, C20) |
| 32240 | Capacitor - Electrolytic, 2sections 10 mfd. and 1 section 20 mfd. (C23, C24, C31) |
| 14281 | Transformer - First I-F Transformer (L8, L9, C14, C15) |
| 33665 | Mechanism - Comprising 5 push arms, cams, cam plate and mounting bracket assembled. |
| 33668 | Case - Receiver case only. |
| 33670 | Dial - Dial scale and holder. |
| 33671 | Knob - Volume control or tuning knob. |
| 33669 | Mounting - Complete set mounting brackets, strap washers, screws, bolts and nuts. |

Stock No's 4838, 14393, 31598, 14376, 31645, 31656, 31653, 31654, 31658 and 31662 not used with Model M-50.

**Push-Arm Inserts:**

Special push-arm inserts are now available to take care of stripped threads on the push button mechanism in these models.

**Stock No. 36160** Insert is for use in Models 9M1, 9M2, 96X-11, -12, -13, -14.

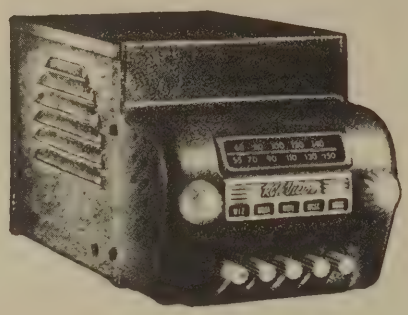
**Stock No. 36161** Insert is for use in Models M-50, M-60, and M-70.

# MODELS 9M2 and M60

Chassis No. RC 357A RC 357K

## Six-Tube, Push-Button, Superheterodyne Automobile Receiver

MODEL 9M2



MODEL M 60

## Electrical Specifications

TUBES AND FUNCTIONS

| | |
|---|---|
| 6K7 | R-F Amplifier |
| 6A8 | First Detector—Oscillator |
| 6K7 | I-F Amplifier |
| 6Q7 | Second Detector, A-F Amplifier and A.V.C. |

FREQUENCY RANGE ..... 550-1,550 kc

POWER OUTPUT

| | |
|---|---|
| Type | Pentode |
| Undistorted | 2.0 watts |
| Maximum | 3.5 watts |

POWER SUPPLY RATING

| | |
|---|---|
| Supply Voltage | 6.3 volts |
| Current Drain | 6.5 amperes |

| 9M2 | M60 | |
|---|---|---|
| 6F6 | 6K6GT | Output |
| 6X5 | 0Z4G | Rectifier |
| Dial Lamp | | 6-8 volts, 0.2 amp., Mazda 51 |

LOUDSPEAKER

| | |
|---|---|
| Type | Electrodynamic |
| Size | 5 inches |
| Voice-Coil Impedance | 3.2 ohms at 400 cycles |
| Field Coil Resistance | 5 ohms |
| App. Field Coil Voltage Drop | 6 volts |

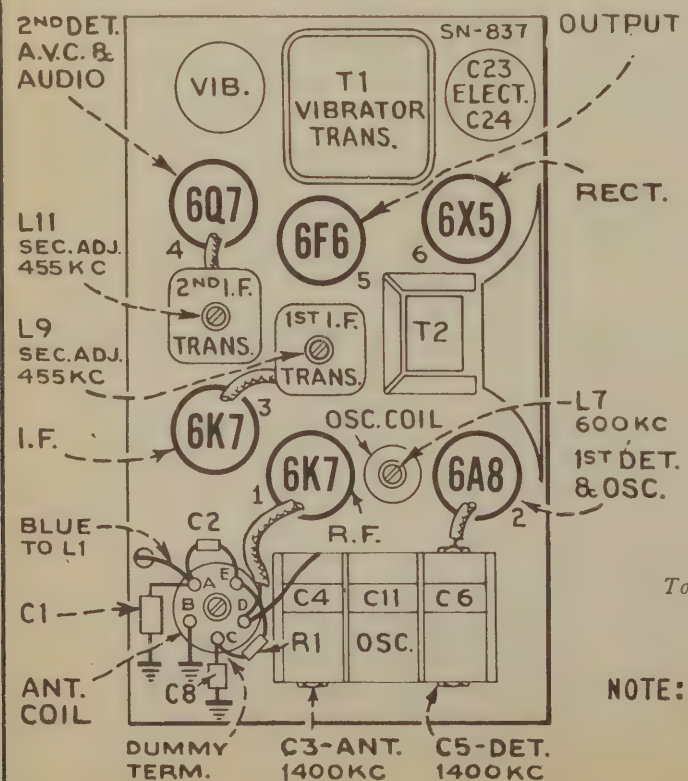
### Antenna Circuit

The antenna circuit is designed to work with an antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If an antenna having a larger capacity is to be used, it will be necessary to add a capacitor in series with the lead from antenna filter L-1 to the antenna coil terminal ("A"). Where a "Double Under the Running Board" type of antenna is to be used having a capacity of approximately 200 mmf. the capacitor added should be approximately 300 mmf. The insulated running board type having an approximate capacity of 550 mmf. will require a capacitor of approximately 200 mmf. Cars using an insulated steel top of approximately 3,500 mmf. will require a series capacitor of 150 mmf.

After installation, and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer (C-3) for maximum signal output. This trimmer is accessible by prying off the nameplate between the control knobs.

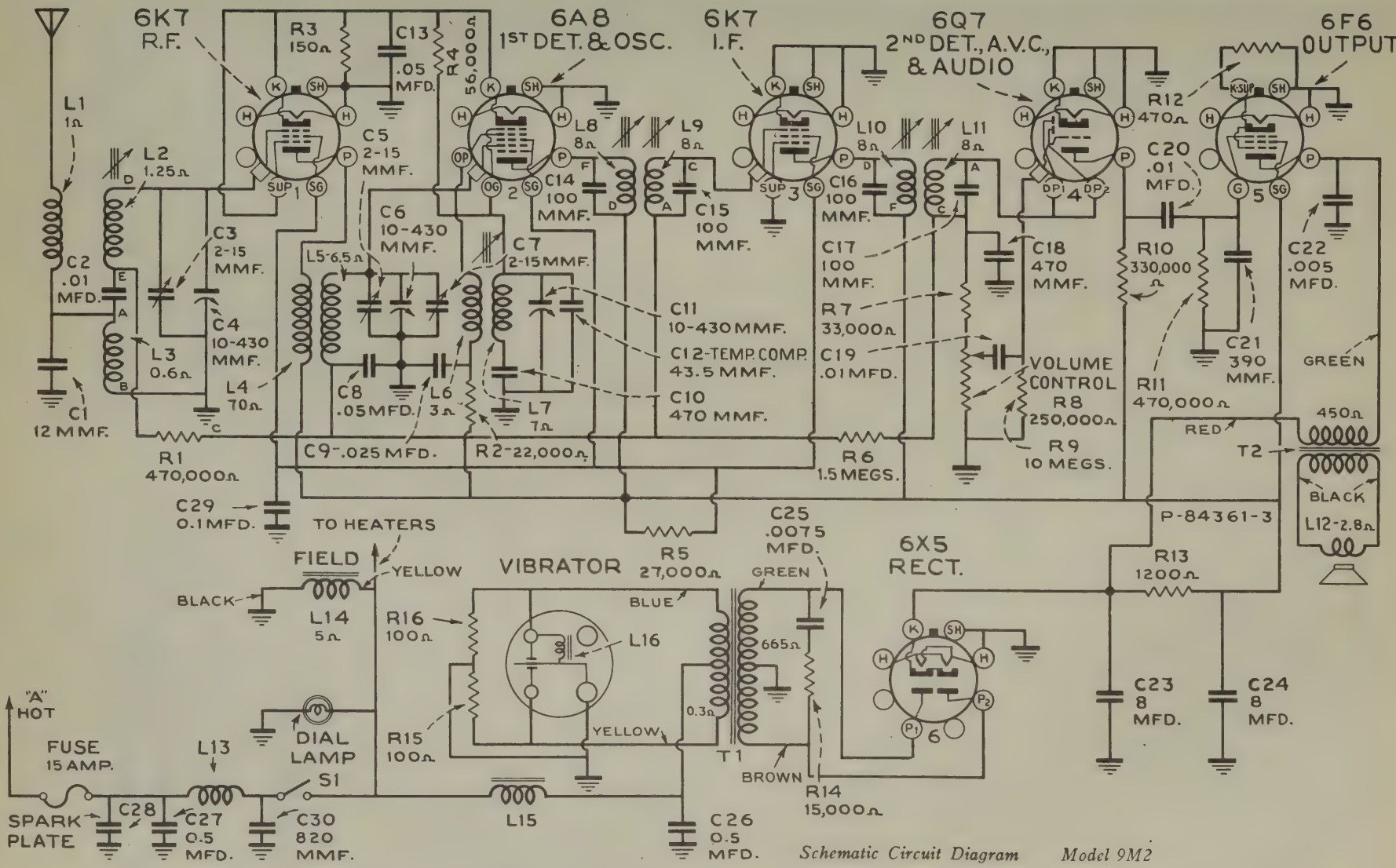
### Antenna Filter

A filter is included in the antenna circuit. Being completely shielded, it prevents radiating ignition interference within the set. It also reduces the possibility of picking up vibrator interference. The filter unit is mounted inside a steel shell which in turn is welded to the chassis. The shielded antenna lead-in makes contact with the filter unit within the steel shell and is held in place by a bayonet type connector.




*Top View of Chassis* MODEL 9M2

NOTE: MODEL M-60 USES TYPE 6K6GT AS OUTPUT AND 0Z4G AS RECTIFIER.




*Schematic Circuit Diagram* *Model 9M2*

**MODEL M-60 IS IDENTICAL ELECTRICALLY TO MODEL 9M2 WITH THESE EXCEPTIONS:**

$C_9$ is 0.05 mfd., $C_{30}$ is 680 mmfd.
$C_{22}$ is shunted across the output transformer primary.
$C_{23}$ and $C_{24}$ are 10 mfd. each.
The output tube is Type 6K6GT.
The rectifier tube is Type $0Z_4G$.

# Alignment Procedure

PRELIMINARY:

Output meter connections ..... Across speaker voice coil
Output meter readings to indicate 1 watt ..... 1.8 volts
Generator ground lead connections ..... To chassis
Dummy antenna value to be in series with generator output ..... See Chart Below
Connection of generator output lead ..... See Chart Below
Generator modulation ..... 30%, 400 cycles
Position of Volume Control ..... Fully clockwise

| Position of Dial Pointer | Generator Frequency | Dummy Antenna | Generator Connection | Adjustment Symbol | Circuit Adjusted |
|---|---|---|---|---|---|
| No Signal 550-750 kc | 455 kc | .001 mfd. | 6K7 I.F. Grid | L-10, L-11 | 2nd I.F. Trans. |
| No Signal 550-750 kc | 455 kc | .001 mfd. | 6A8 Grid | L-8, L-9 | 1st I.F. Trans. |
| Rock Through 600 kc | 600 kc | .0001 mfd.† | Ant. Lead | L-7 | Osc. |
| 1,400 kc ** | 1,400 kc | .0001 mfd.† | Ant. Lead | C-5 | Det. |
| 1,400 kc ** | 1,400 kc | .0001 mfd.† | Ant. Lead | C-3 | Ant. |
| Rock Through 600 kc | 600 kc | .0001 mfd.† | Ant. Lead | L-7 | Osc. |
| 1,400 kc ** | 1,400 kc | .0001 mfd.† | Ant. Lead | C-5 | Det. |
| 1,400 kc ** | 1,400 kc | .0001 mfd.† | Ant. Lead | C-3* | Ant. |

## IMPORTANT ALIGNMENT NOTES

† Make the generator connection to the receiver through a shielded lead-in having not more than 50 mmf. (.00005) capacity with a male connector attached for connection to antenna socket. If a capacitor has been added in series with the lead from antenna filter L-1 to the antenna coil, as outlined under "Antenna Circuit," for reason of a high capacity antenna, the Dummy Antenna should be the same value as the antenna itself.

* Re-adjust C-3 after installation as outlined under "Antenna Circuit" in "Service Hints."

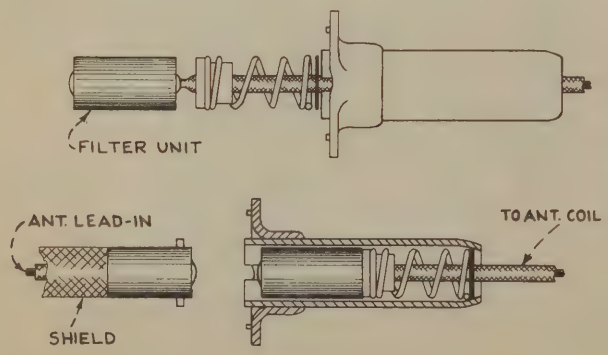
Each step of the alignment should be repeated in its original order for greater accuracy. Always keep the output from the generator at its lowest possible value, to prevent the A.V.C. action of the receiver from interfering with accurate alignment.

Alignment adjustment locations are shown on the top and bottom parts location views of chassis.

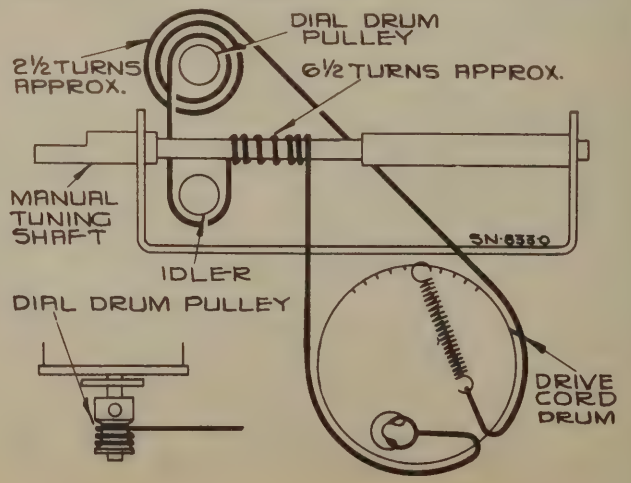
Only the dummy antenna indicated in the chart for any particular frequency should be used. Grid cap leads should remain in place during alignment.

## ** OSCILLATOR CIRCUIT

A magnetite core is used to provide temperature stability. The conventional high frequency trimmer has been replaced with a fixed temperature-compensating capacitor (C-12) which determines the high frequency range. Since the inductance of L-7 is adjustable, the conventional series trimmer has been replaced with a fixed capacitor (C-10). C-10 is a special capacitor having zero temperature coefficient to provide for oscillator stability in the low frequency range. Aligning the receiver for 600 kc is accomplished by adjusting L-7 to the antenna and det. circuits (gang condenser must be rocked while making this adjustment). The 1,400 kc alignment is accomplished by adjusting the antenna and the det. trimmers (C-3 and C-5) to the oscillator.




*Antenna Filter*

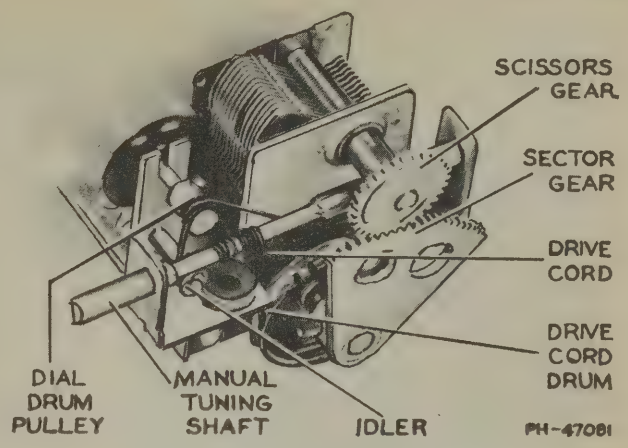



*Drive Cord Hookup*

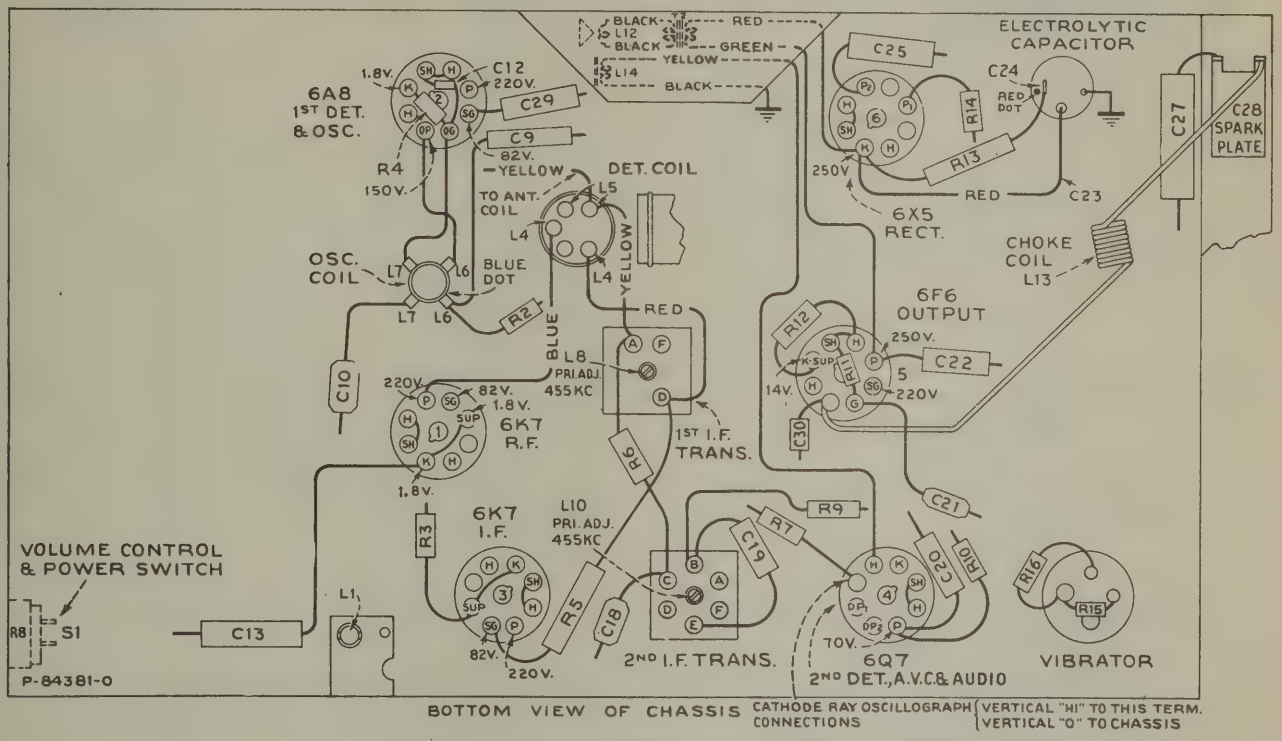
## Adjustments

The mechanism should be adjusted so that when using either manual or push-button tuning, it operates positively and without backlash or bind. The following hints will be found helpful in adjusting the mechanism properly.

1. With the gang condenser in full mesh, the sector gear should have the two end teeth fully meshed in the scissor gear.
2. The position of the sector gear on the rocker-plate shaft should be adjusted so that there is clearance between the rocker-plates and the frame of the push-button mechanism at both extremities of gang rotation. Thus correct adjustment prevents the rotation of the gang being limited by the rocker plates touching the frame.
3. The drive cord should have 8½ turns around the tuning shaft as shown in the illustration. Three degrees of adjustment of the tension on the drive cord may be obtained by use of the three positions for connecting the drive-cord-tension spring to the drive-cord drum on the condenser shaft as shown.
4. The push-arms, rocker-plate shaft, and pulleys should be lubricated with light grease (sparingly). Care should be taken to keep the lubricant off the drive cord.




*Tuning Mechanism*




*Bottom View of Parts and Socket Voltages* **MODEL 9M2**

(Measured at 6.3 volts battery supply—Volume control minimum—No signal input—)

To duplicate the conditions under which the above voltages were measured requires a 1,000-ohm-per-volt d-c meter having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the indicated voltage value. Each value should hold within ± 20% when the receiver is normally operative at its rated battery voltage.

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | RECEIVER ASSEMBLIES 9M2 | | 31601 | Coil—Antenna coil less shield (L2, L3) | |
| 13002 | Capacitor—12 mmfd. (C1) | | 31977 | Coil—Antenna filter (L1) | |
| 31729 | Capacitor—43.5 mmfd. (C12) | | 31595 | Coil—Oscillator coil and shield (L6, L7) | |
| 30904 | Capacitor—100 mmfd. (C14, C15, C16, C17) | | 31600 | Coil—r-f coil less shield (L4, L5) | |
| 13894 | Capacitor—390 mmfd. (C21) | | 11765 | Lamp—Dial lamp | |
| 30433 | Capacitor—470 mmfd. (C18) | | 30641 | Lead—Ammeter lead (chassis end), complete with male section of fuse holder | |
| 31727 | Capacitor—470 mmfd., temp. coeff. (C10) | | 30540 | Resistor—100 ohms, ½ watt (R15, R16) | |
| 31730 | Capacitor—820 mmfd. (C30) | | 13428 | Resistor—150 ohms, ½ watt (R3) | |
| 4838 | Capacitor—.005 mfd. (C22) | | 30499 | Resistor—470 ohms, ½ watt (R12) | |
| 30626 | Capacitor—.0075 mfd. (C25) | | 6134 | Resistor—1200 ohms, 1 watt (R13) | |
| 14393 | Capacitor—.01 mfd. (C2, C19, C20) | | 12695 | Resistor—15,000 ohms, ½ watt (R14) | |
| 30882 | Capacitor—.05 mfd. (C13) | | 13998 | Resistor—22,000 ohms, ½ watt (R2) | |
| 4886 | Capacitor—.05 mfd. (C8) | | 13477 | Resistor—27,000 ohms, 1 watt (R5) | |
| 4839 | Capacitor—0.1 mfd. (C29) | | 12454 | Resistor—33,000 ohms, ½ watt (R7) | |
| 12741 | Capacitor—0.5 mfd. (C27) | | 12286 | Resistor—56,000 ohms, ½ watt (R4) | |
| 31599 | Capacitor—Comprising two 8 mfd. sections (C23, C24) | | 14983 | Resistor—330,000 ohms, ½ watt (R10) | |
| | | | 12285 | Resistor—470,000 ohms, ½ watt (R1, R11) | |

# REPLACEMENT PARTS—Continued

| STOCK No. | DESCRIPTION |
|---|---|
| 12201 | Resistor—1.5 meg., ½ watt (R6) |
| 13601 | Resistor—10 meg., ½ watt (R9) |
| 13471 | Ring—Retaining ring for coil Stock No. 31601 |
| 3584 | Ring—Retaining ring for coil Stock No. 31600 |
| 31639 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 13686 | Socket—Vibrator socket |
| 30957 | Transformer—First i-f transformer (L8, L9, C14, C15) |
| 31593 | Transformer—Second i-f transformer (L10, L11, C16, C17) |
| 31597 | Transformer—Vibrator power transformer (T1, L15, C26) |
| 13688 | Vibrator—Plug-in vibrator complete (L16) |
| 31638 | Volume control and power switch (R8, S1) |
| | TUNING UNIT ASSEMBLIES |
| 31605 | Condenser—3-gang variable condenser (C3, C4, C5, C6, C7, C11, C12) |
| 31614 | Cord—Variable condenser drive cord |
| 31725 | Drum—Indicator drum assembly |
| 31610 | Drum—Variable condenser drive cord drum |
| 31612 | Gear—Variable condenser drive gear sector—fastens on cam shaft |
| 31645 | Mechanism—Comprising 5-push button levers and cams, cam plate, and variable condenser mounting bracket, assembled |
| 31606 | Pulley—Indicator drum pulley |
| 31607 | Pulley—Pulley for indicator drum bracket |
| 4389 | Screw—No. 6-32 x 3/16 in. set screw for pulley Stock No. 31606 |
| 31613 | Screw—No. 8-32 x ¼ in. set screw for gear Stock No. 31612 |
| 31611 | Screw—No. 8-32 x ¼ in. set screw for drum Stock No. 31610 |
| 31609 | Shaft—Station selector knob shaft |
| 31615 | Spring—Variable condenser drive cord tension spring |
| 30585 | Spring—Push button arm tension spring |
| 2917 | Washer—"C" washer to hold knob shaft |
| 31608 | Washer—"C" washer to hold pulley Stock No. 31607 |
| | SPEAKER ASSEMBLIES |
| | Speaker 84391-1 |
| 35913 | Cone—Speaker cone and voice coil (L12) |
| 30781 | Speaker complete |
| 30783 | Transformer—Output transformer (T2) |
| | SPEAKER ASSEMBLIES |
| | Speaker 84391-3 |
| 31771 | Cone—Speaker cone and voice coil (L12) |
| 31770 | Speaker complete |
| 31772 | Transformer—Output transformer (T2) |
| | MISCELLANEOUS ASSEMBLIES |
| 4289 | Body—Fuse holder body for ammeter lead |
| 31657 | Button—Push button |
| 5025 | Capacitor—Generator capacitor |
| 31653 | Case—Complete receiver case only— less name plate, and dial scale |
| 4291 | Clip—Spring clip for ammeter lead |
| 31456 | Covers—8-protective celluloid covers for call letter markers |
| 31655 | Dial—Dial scale and holder |
| 4286 | Ferrule—Bushing and ferrule for fuse holder |
| 5023 | Fuse—15 amp. |
| 4290 | Insulator—Insulating sleeve for fuse holder |
| 31659 | Knob—Station selector or volume control knob |
| 7766 | Lead—Ammeter lead complete with clip and fuse holder |
| 31589 | Markers—One set call letter markers for push buttons |
| 31662 | Mounting—Complete set of mounting brackets, strap, washers, screws, bolts, and nuts |
| 31661 | Plate—Name plate |
| 31646 | Spring—Retaining spring for knobs |
| 4284 | Spring—Spring for fuse holder |
| 5024 | Suppressor—Distributor suppressor |
| 4285 | Washer—Insulating washer for fuse holder |
| 34053 | Spring—Push-button retaining spring |
| | CHASSIS ASSEMBLIES **M60** (RC-357K) |
| 13002 | Capacitor—12 mmfd. (C1) |
| 31729 | Capacitor—43.5 mmfd., temp. comp. (C12) |
| 30904 | Capacitor—100 mmfd. (C14, C15, C16, C17) |
| 13894 | Capacitor—390 mmfd. (C21) |
| 14497 | Capacitor—680 mmfd. (C30) |
| 33584 | Capacitor—.005 mfd. (C19, C22) |
| 30626 | Capacitor—.0075 mfd. (C25) |
| 14393 | Capacitor—.01 mfd. (C2) |
| 4937 | Capacitor—.01 mfd. (C20) |
| 32787 | Capacitor—.05 mfd. (C8, C9) |
| 30882 | Capacitor—.05 mfd. (C13) |
| 4839 | Capacitor—0.1 mfd. (C29) |
| 12741 | Capacitor—0.5 mfd. (C27) |
| 33803 | Capacitor—Electrolytic, 2 sections 10 mfd. each (C23, C24) |

| STOCK No. | DESCRIPTION |
|---|---|
| 32363 | Capacitor—470 mfd. (C10, C18) |
| 31596 | Clip—Spring clip to hold oscillator coil |
| 33664 | Coil—Antenna coil (L2, L3) |
| 31977 | Coil—Antenna filter (L1) |
| 31595 | Coil—Oscillator coil (L6, L7) |
| 31600 | Coil—R.F. coil—less shield (L4, L5) |
| 11765 | Lamp—Dial lamp |
| 30641 | Lead—"A" lead |
| 30540 | Resistor—100 ohms, ½ watt (R15, R16) |
| 13428 | Resistor—150 ohms, ½ watt (R3) |
| 30499 | Resistor—470 ohms, ½ watt (R12) |
| 6134 | Resistor—1,200 ohms, 1 watt (R13) |
| 12695 | Resistor—15,000 ohms, ½ watt (R14) |
| 13998 | Resistor—22,000 ohms, ½ watt (R2) |
| 13477 | Resistor—27,000 ohms, 1 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R7) |
| 12286 | Resistor—56,000 ohms, ½ watt (R4) |
| 14983 | Resistor—330,000 ohms, ½ watt (R10) |
| 12285 | Resistor—470,000 ohms, ½ watt (R1, R11) |
| 12201 | Resistor—1.5 meg., ½ watt (R6) |
| 13601 | Resistor—10 meg., ½ watt (R9) |
| 3584 | Ring—R.F. coil retaining ring |
| 31639 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 13686 | Socket—Vibrator socket |
| 30902 | Transformer—First i-f transformer (L8, L9, C14, C15) |
| 31593 | Transformer—Second i-f transformer (L10, L11, C16, C17) |
| 31597 | Transformer—Vibrator power transformer (T1, L15, C26) |
| 13688 | Vibrator—Plug-in vibrator complete (L16) |
| 31638 | Volume control and power switch (R8, S1) |
| | SPEAKER ASSEMBLIES (SAME AS USED WITH MODEL 9M2) |
| | TUNING UNIT ASSEMBLIES |
| 33667 | Button—Push button |
| 31605 | Condenser—3-gang variable (C3, C4, C5, C6, C7, C11) |
| 31614 | Cord—Variable condenser drive cord |
| 31725 | Drum—Indicator drum assembly |
| 31610 | Drum—Variable condenser drive cord drum |
| 31612 | Gear—Variable condenser drive gear sector—fastens on cam shaft |
| 33665 | Mechanism—Comprising 5 push arms, cams, cam plate, and mounting bracket assembled—less variable condenser |
| 31606 | Pulley—Indicator drum pulley |
| 31607 | Pulley—Pulley for indicator drum bracket |
| 13471 | Ring—Retaining ring for antenna coil |
| 4389 | Screw—No. 6-32 x 3/16-in. set screw for pulley, Stock No. 31606 |
| 31613 | Screw—No. 8-32 x ¼-in. set screw for gear, Stock No. 31612 |
| 31611 | Screw—No. 8-32 x ¼-in. set screw for drum, Stock No. 31610 |
| 31609 | Shaft—Station selector knob shaft |
| 31615 | Spring—Variable condenser drive cord tension spring |
| 30585 | Spring—Push button arm tension spring |
| 2917 | Washer—"C" washer to hold knob shaft |
| 31608 | Washer—"C" washer to hold pulley, Stock No. 31607 |
| | MISCELLANEOUS ASSEMBLIES |
| 4289 | Body—Fuse holder body for ammeter lead |
| 5025 | Capacitor—Generator capacitor |
| 33668 | Case—Receiver case only |
| 4291 | Clip—Spring clip for ammeter lead |
| 31456 | Covers—8-protective celluloid covers for call letter markers |
| 33670 | Dial—Dial scale and holder |
| 4286 | Ferrule—Bushing and ferrule for fuse holder |
| 5023 | Fuse—15 amp. |
| 4290 | Insulator—Insulating sleeve for fuse holder |
| 33672 | Knob—Volume control or tuning knob |
| 7766 | Lead—Ammeter lead complete with clip and fuse holder |
| 31589 | Markers—One set call letter markers for push buttons |
| 33669 | Mounting—Complete set mounting brackets, strap, washers, screws, bolts, and nuts |
| 31646 | Spring—Retaining spring for knobs |
| 4284 | Spring—Spring for fuse holder |
| 5024 | Suppressor—Distributor suppressor |
| 4285 | Washer—Insulating washer for fuse holder |

**Push-Arm Inserts:**

Special push-arm inserts are now available to take care of stripped threads on the push button mechanism in these models.

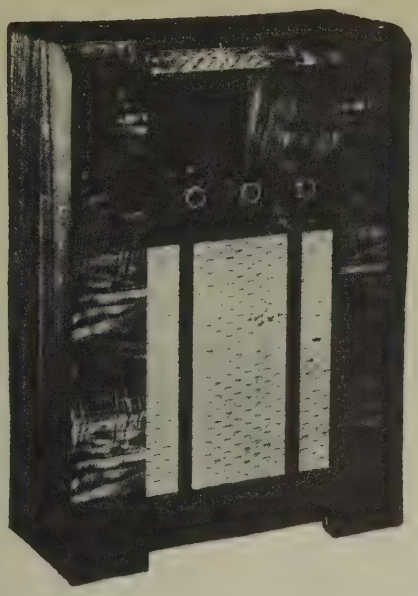
**Stock No. 36160** Insert is for use in Models 9M1, 9M2, 96X-11, -12, -13, -14.

**Stock No. 36161** Insert is for use in Models M-50, M-60, and M-70.

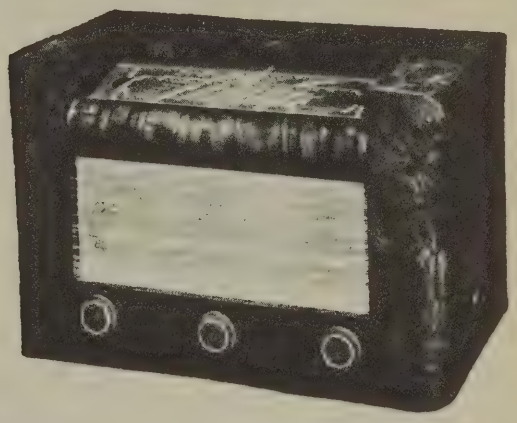
# Models 9Q1 and 9QK

## Chassis No. RC-444 and 444A

## Nine-Tube, Seven-Band, A-C, Receivers



*Model 9QK*



*Model 9Q1*

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (556-174 m) |
| Medium Wave ("B" Band) | 3.0 -9.5 mc (100-31.6 m) |
| 31 Meter Spread Band | 9.5 -11.7 mc (31.6-25.6 m) |
| 25 Meter Spread Band | 11.7-15.1 mc (25.6-19.9 m) |
| 19 Meter Spread Band | 15.1-17.75 mc (19.9-16.9 m) |
| 16 Meter Spread Band | 17.75-18.1 mc (16.9-16.6 m) |
| 13 Meter Spread Band | 21.42-22.4 mc (14.0-13.4 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

POWER SUPPLY RATINGS

| Symbol | Voltage | Frequency (cycles) | Watts |
|---|---|---|---|
| Rating A | 105-125 | 50-60 | 100 |
| Rating B | 105-125 | 25-60 | 100 |
| Rating C | 100-130, 140-160, 195-250 | 40-60 | 100 |

TUBE COMPLEMENT

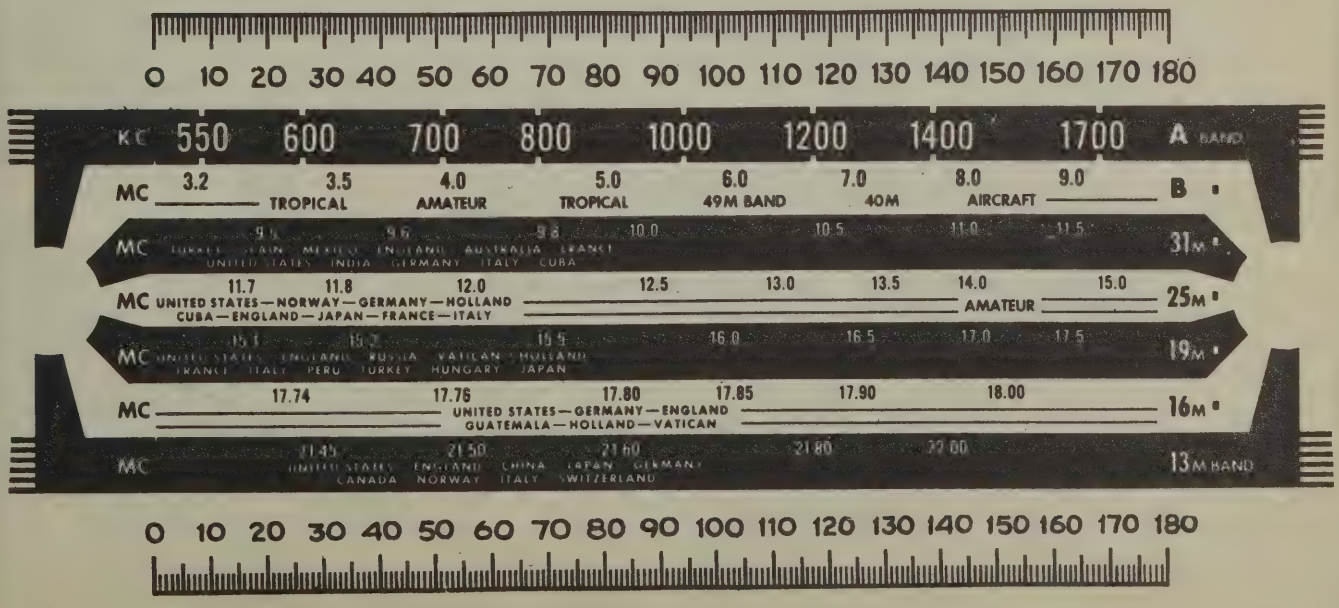
| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector |
| (3) RCA-6SA7 | Oscillator |
| (4) RCA-6B8 | I-F Amplifier, 2nd Det., A.V.C. |
| (5) RCA-6SC7 | A-F Amplifier, Phase Inverter |
| (6) RCA-6F6-G | Power Output |
| (7) RCA-6F6-G | Power Output |
| (8) RCA-6U5/6G5 | Tuning Indicator |
| (9) RCA-5Y3-G | Rectifier |

| LOUDSPEAKER | 9Q1 | 9QK |
|---|---|---|
| Model | (RL-63K-5) | (RL-70J-3) |
| Type | 8-inch Electrodynamic | 12-inch Electrodynamic |
| V.C. Impedance at 400 C.P.S. | 2.2 ohms | 2.2 ohms |
| PILOT LAMPS (3) | Mazda 51, 7.5 volts, 0.2 amp. | |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 4.5 watts |
| Maximum | 5 watts |

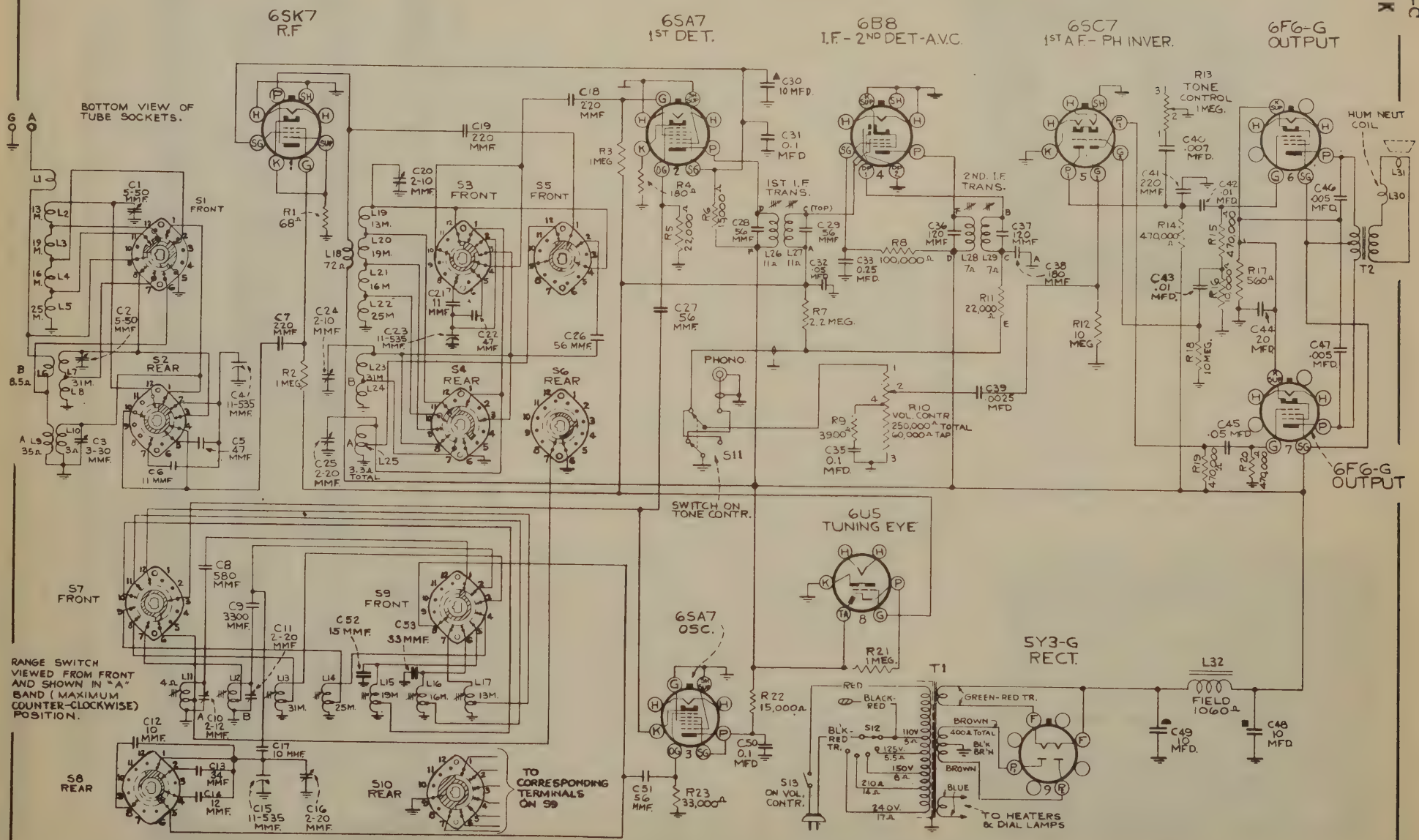
## Calibration Scale


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
KC 550 600 700 800 1000 1200 1400 1700 A BAND
MC 3.2 3.5 4.0 5.0 6.0 7.0 8.0 9.0 B
TROPICAL AMATEUR TROPICAL 49M BAND 40M AIRCRAFT
MC 9.5 9.6 9.8 10.0 10.5 11.0 11.5 31M
TURKEY SPAIN MEXICO ENGLAND AUSTRALIA FRANCE
UNITED STATES INDIA GERMANY ITALY CUBA
MC 11.7 11.8 12.0 12.5 13.0 13.5 14.0 15.0 25M
UNITED STATES—NORWAY—GERMANY—HOLLAND
CUBA—ENGLAND—JAPAN—FRANCE—ITALY
AMATEUR
MC 15.1 15.2 15.5 16.0 16.5 17.0 17.5 19M
UNITED STATES ENGLAND RUSSIA VATICAN HOLLAND
FRANCE ITALY PERU TURKEY HUNGARY JAPAN
MC 17.74 17.76 17.80 17.85 17.90 18.00 16M
UNITED STATES—GERMANY—ENGLAND
GUATEMALA—HOLLAND—VATICAN
MC 21.45 21.50 21.60 21.80 22.00 13M BAND
UNITED STATES ENGLAND CHINA JAPAN GERMANY
CANADA NORWAY ITALY SWITZERLAND
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

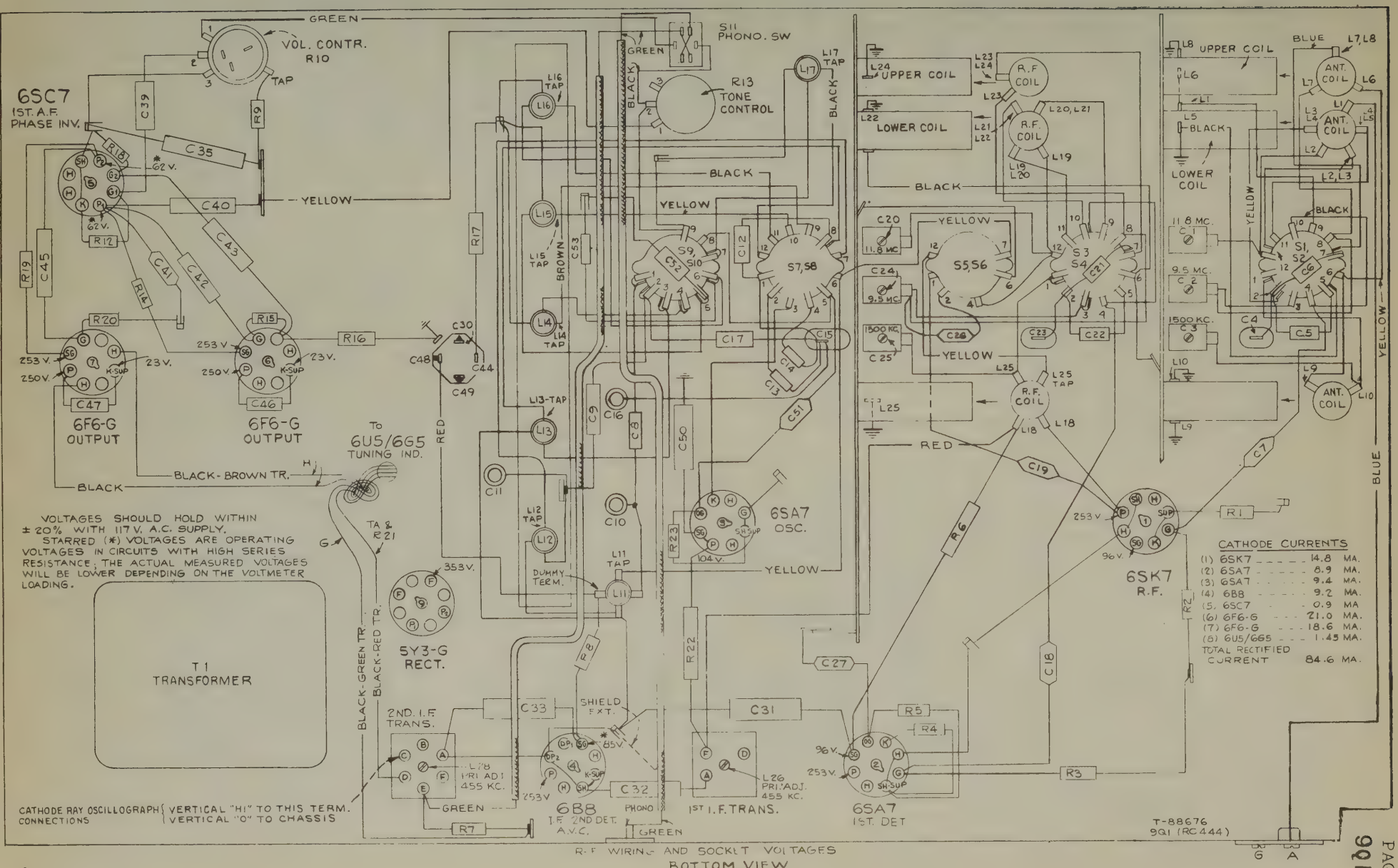
*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*

**Precautionary Lead Dress.—**

1. C-39 must be pushed downward as close to the chassis and front apron as possible.
2. The power cord leads must be pushed as far away from C-39 and the 6SC7 and 6F6G sockets as possible, preferably toward the center of the chassis.
3. Dress the green lead from the volume control to the phono. switch directly against the front apron for its entire length.




*Schematic Circuit Diagram*


6SC7
1ST. A.F.
PHASE INV.
VOL. CONTR.
R10
TAP
GREEN
C39
R9
C35
62 V.
YELLOW
C40
C43
C41
C42
R18
R12
R14
R19
C45
R20
R15
253 V.
250 V.
23 V.
K-SUP
C47
C46
6F6-G
OUTPUT
6F6-G
OUTPUT
R16
C30
C48
C44
C49
To
6U5/6G5
TUNING IND.
RED
BLACK-BROWN TR.
BLACK
H
G
TA & R21
VOLTAGES SHOULD HOLD WITHIN
± 20% WITH 117 V. A.C. SUPPLY.
STARRED (*) VOLTAGES ARE OPERATING
VOLTAGES IN CIRCUITS WITH HIGH SERIES
RESISTANCE; THE ACTUAL MEASURED VOLTAGES
WILL BE LOWER DEPENDING ON THE VOLTMETER
LOADING.
T1
TRANSFORMER
353 V.
5Y3-G
RECT.
BLACK-GREEN TR.
BLACK-RED TR.
2ND. I.F.
TRANS.
L18
1ST ADJ
455 KC.
GREEN
CATHODE RAY OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERM.
VERTICAL "O" TO CHASSIS
L16 TAP
L16
L15
L15 TAP
BROWN
L14
L14 TAP
L13-TAP
L13
L12 TAP
L12
DUMMY
TERM.
L11 TAP
L11
C53
C9
C16
C8
C11
C10
C12
C52
S9, S10
S7,58
U3
C17
C15
C14
C13
C51
C50
R17
R23
6SA7
OSC.
104 V.
YELLOW
R22
C27
C31
R5
R4
R3
R7
R8
SHIELD
EXT.
C33
C32
688
I.F. 2ND DET.
A.V.C.
85 V.
253 V.
PHONO
GREEN
L26
PRI. ADJ.
455 KC.
1ST I.F. TRANS.
6SA7
1ST. DET
96 V.
S11
PHONO. SW
R13
TONE
CONTROL
BLACK
L17 TAP
L17
L24
UPPER COIL
L22
LOWER COIL
L23
L24
L21
L22
R.F.
COIL
L20, L21
L19
L19
L20
BLACK
YELLOW
C20
11.8 MC.
C24
9.5 MC.
1500 KC.
C25
S5,56
S3
S4
C21
C26
C23
C22
YELLOW
L25
L25 TAP
R.F.
COIL
L18
L25
RED
C19
6SK7
R.F.
253 V.
96 V.
R6
R1
R2
C7
C18
CATHODE CURRENTS
(1) 6SK7 - - - - - 14.8 MA.
(2) 6SA7 - - - - - 8.9 MA.
(3) 6SA7 - - - - - 9.4 MA.
(4) 6B8 - - - - - 9.2 MA.
(5) 6SC7 - - - - 0.9 MA
(6) 6F6-G - - - 21.0 MA.
(7) 6F6-G - - - 18.6 MA.
(8) 6U5/6G5 - - - 1.45 MA.
TOTAL RECTIFIED
CURRENT 84.6 MA.
L8 UPPER COIL
L6
L7
L5
BLACK
LOWER
COIL
L1
L2
L3
L4
BLUE
L7,L8
ANT.
COIL
L2,L3
YELLOW
BLACK
11.8 MC.
C1
9.5 MC.
C2
1500 KC.
C3
C4
C5
S1, S2
C6
L10
L9
ANT.
COIL
YELLOW
BLUE
T-88676
9Q1 (RC444)
G
A
R-F WIRING AND SOCKET VOLTAGES
BOTTOM VIEW

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

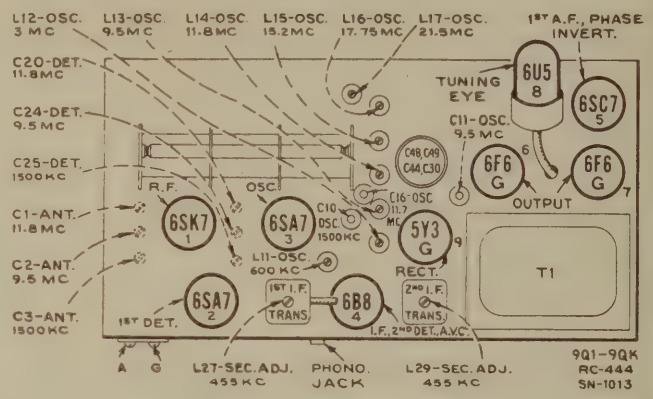
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

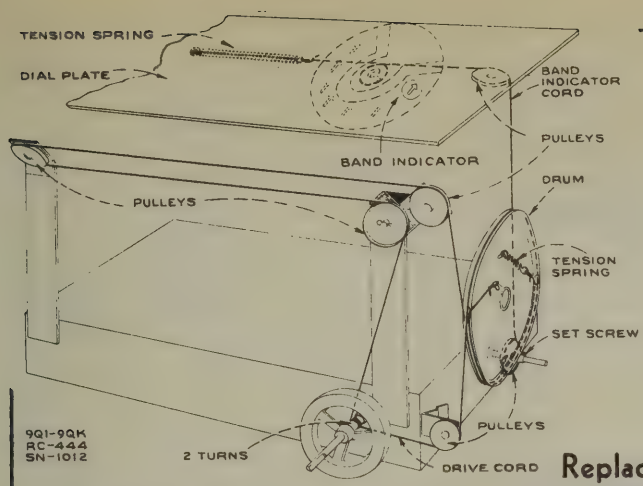
For additional information, refer to booklet "RCA Victor Receiver Alignment."

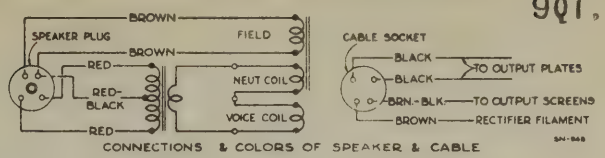


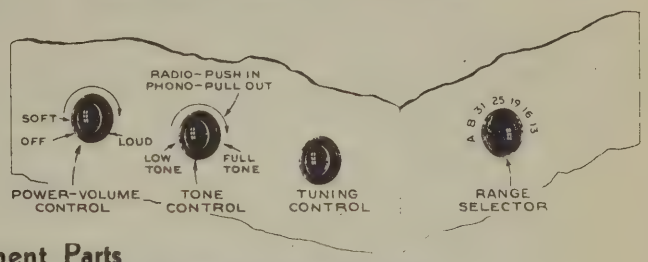

*Tube and Trimmer Locations*

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6B8 I-F Grid in series with .01 mfd. | 455 kc | A | Quiet Point Near 0° | L29 and L28 (2nd I.F. Trans.) |
| 2 | 6SA7 1st Detector Grid in series with .01 mfd. | | | | L27 and L26 (1st I.F. Trans.) |
| 3 | Antenna Terminal in series with 300 ohms | 9.5 mc | 31M | 20° | L13 (osc.)* C24 (det.)† C2 (ant.) |
| 4 | | 11.7 mc | | 171° | C16 (osc.)* |
| 4A | | Check to determine that C16 has been adjusted to the correct peak by turning radio to 10.8 mc (141°) where a weaker signal should be received. | | | |
| 5 | | 9.5 mc | B | 180° | C11 (osc.)* |
| 5A | | Check to determine that C11 has been adjusted to the correct peak by turning radio to 8.6 mc (156°) where a weaker signal should be received. | | | |
| 6 | | 3.0 mc | B | 0° | L12 (osc.)* (Rock Gang) |
| 7 | Antenna Terminal in series with 200 mmf. | 1,500 kc | A | 149° | C10 (osc.) C3 (ant.) C25 (det.) |
| 8 | | 600 kc | | 27° | L11 (osc.) (Rock Gang) |
| 8A | | Repeat steps 7 and 8. | | | |
| 9 | Antenna Terminal in series with 300 ohms | 11.8 mc | 25M | 33° | L14 (osc.)* C20 (det.)† C1 (ant.) |
| 10 | | 15.2 mc | 19M | 37° | L15 (osc.)* |
| 11 | | 17.75 mc | 16M | 40° | L16 (osc.)** |
| 12 | | 21.5 mc | 13M | 55° | L17 (osc.)** |

* Use peak with plunger out if two peaks can be obtained.
** Use peak with plunger in if two peaks can be obtained.
† Rock gang condenser slightly while peaking. Use maximum capacity peak if two peaks can be obtained.
Note: Oscillator tracks above signal on A, B, 31M, 25M and 19M bands; below signal on 16M and 13M bands.




# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 14517 | Board—"Antenna-Ground" board |
| 34665 | Bracket—Drive cord bracket and pulley—long bracket with one pulley |
| 34660 | Bracket—Drive cord bracket and pulley—short bracket with one pulley |
| 34656 | Bracket—Drive cord bracket and pulleys—long bracket with two pulleys |
| 12714 | Capacitor—Air trimmer—2-12 mmfd. (C10) |
| 12884 | Capacitor—Air trimmer—long—2-20 mmfd. (C11, C16) |
| 34654 | Capacitor—Trimmer comprising 2 sections of 2.5-10 mmfd. and 1 section of 2.5-20 mmfd. (C20, C24, C25) |
| 34653 | Capacitor—Trimmer comprising 2 sections of 5-50 mmfd. and 1 section of 3-30 mmfd. (C1, C2, C3) |
| 13200 | Capacitor—10 mmfd. (C12, C17) |
| 34668 | Capacitor—11 mmfd. (C6, C21) |
| 33380 | Capacitor—12 mmfd. (C14) |
| 12896 | Capacitor—15 mmfd. (C52) |
| 12948 | Capacitor—33 mmfd. (C53) |
| 34670 | Capacitor—34 mmfd. (C13) |
| 13141 | Capacitor—47 mmfd. (C5, C22) |
| 12723 | Capacitor—56 mmfd. (C26, C27, C51) |
| 30949 | Capacitor—56 mmfd. (C28, C29) |
| 31813 | Capacitor—120 mmfd. (C36, C37) |
| 14712 | Capacitor—180 mmfd. (C38) |
| 12694 | Capacitor—220 mmfd. (C7, C18, C19, C41) |
| 33235 | Capacitor—580 mmfd. (C8) |
| 31403 | Capacitor—3,300 mmfd. (C9) |
| 34459 | Capacitor—.0025 mfd. (C39) |
| 33584 | Capacitor—.005 mfd. (C46, C47) |
| 5148 | Capacitor—.007 mfd. (C40) |
| 4937 | Capacitor—.01 mfd. (C42, C43) |
| 32787 | Capacitor—.05 mfd. (C32, C45) |
| 4839 | Capacitor—0.1 mfd. (C31, C35, C50) |
| 12484 | Capacitor—0.25 mfd. (C33) |
| 33014 | Capacitor—Electrolytic comprising 3 sections of 10 mfd. and 1 section of 20 mfd. (C30, C44, C48, C49) |
| 34648 | Coil—Antenna coil, 25, 19, 16, 13 meters |
| 34649 | Coil—Antenna coil, "A" band |
| 34647 | Coil—Antenna coil, "B" and 31 meters |
| 34652 | Coil—RF coil, "A" band |
| 34651 | Coil—RF coil, 25, 19, 16, 13 meters |
| 34650 | Coil—RF coil, "B" and 31 meters |
| 31782 | Coil—Oscillator coil for "A" band |
| 34659 | Coil—Oscillator coil for "B" band and 31 meter bands |
| 34661 | Coil—Oscillator coil for 13 meter band |
| 34657 | Coil—Oscillator coil for 16 meter and 19 meter bands |
| 34658 | Coil—Oscillator coil for 25 meter band |
| 34645 | Condenser—Variable tuning condenser |
| 34666 | Control—Tone control |
| 34667 | Control—Volume control and power switch |
| 34662 | Cord—Tuning condenser drive cord |
| 34392 | Drum—Variable tuning condenser drive drum |
| 11765 | Lamp—Dial lamp |
| 5040 | Plug—4 contact female plug for speaker |
| 34663 | Pulley—Range switch pulley and hub |
| 14281 | Resistor—68 ohms, ½ watt (R1) |
| 30545 | Resistor—180 ohms, ½ watt (R4) |
| 30735 | Resistor—560 ohms, 1 watt (R17) |
| 12955 | Resistor—3,900 ohms, ½ watt (R9) |
| 14559 | Resistor—10,000 ohms ½ watt (R16) |
| 33489 | Resistor—15,000 ohms 2½ watt (R6, R22) |
| 14284 | Resistor—22,000 ohms 1/10 watt |
| 13998 | Resistor—22,000 ohms ½ watt (R5) |
| 12454 | Resistor—33,000 ohms ½ watt (R23) |
| 14560 | Resistor—100,000 ohms ½ watt (R8) |
| 12285 | Resistor—470,000 ohms ½ watt (R14, R15, R19, R20) |
| 12013 | Resistor—1 meg., 1/10 watt (R21) |
| 13730 | Resistor—1 megohm ½ watt (R2, R3) |
| 12679 | Resistor—2.2 megohm ½ watt (R7) |
| 13601 | Resistor—10 megohm ½ watt (R12, R18) |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 34392 |
| 14350 | Screw—Square head set screw for pulley Stock No. 34663 |
| 34655 | Shaft—Tuning knob shaft and flywheel |
| 31364 | Socket—Dial lamp socket |
| 34864 | Socket—Magic Eye socket |
| 14278 | Socket—Phonograph input socket |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Tuning condenser drive drum spring |
| 34646 | Switch—Range switch |
| 34664 | Switch—Slide switch for tone control |
| 32263 | Transformer—1st I.F. transformer |
| 14308 | Transformer—2nd I.F. transformer |
| 31734 | Transformer—Power transformer—110 volts 25 cycle |
| 31735 | Transformer—Power transformer—Universal 50-60 cycle |
| 31733 | Transformer—Power transformer—110 volt 60 cycle |
| | **SPEAKER ASSEMBLIES MODEL 9Q1 (RL-63K5)** |
| 31825 | Cap—Dust cap |
| 34615 | Cone—Cone complete with voice coil |
| 5039 | Plug—4 contact male plug for speaker |
| 34671 | Speaker—8" Dynamic complete with cone and voice coil less output transformer and plug |
| 14534 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES MODEL 9QK (RL-70J3)** |
| 31825 | Cap—Dust cap |
| 12079 | Coil—Field coil |
| 11469 | Coil—Neutralizing coil |
| 31275 | Cone—Cone complete with voice coil |
| 5039 | Plug—4 prong male plug for speaker |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 34268 | Cap—Rubber cap for Magic Eye |
| 34285 | Clip—Magic Eye clip |
| 32634 | Cord—Band indicator drive cord |
| 34674 | Dial—Glass dial scale |
| 34673 | Frame—Dial frame assembly complete with frame, brackets and stud less dial, pointer, pointer rod, band indicator, band indicator spring, Magic Eye clip, cord. |
| 34676 | Indicator—Band indicator disc |
| 34490 | Knob—Range switch knob |
| 34677 | Knob—Tone control knob |
| 34489 | Knob—Tuning or volume control and power switch knob |
| 34675 | Pointer—Station selector pointer and carriage |
| 34491 | Shaft—Pointer carriage guide shaft |
| 34678 | Shaft—Tone control extension shaft for Model 9QK |
| 30756 | Spring—Band indicator drive cord spring |
| 4982 | Spring—Retaining spring for knob Stock No. 34489 |
| 14270 | Spring—Retaining spring for knob Stock No. 34490 and Stock No. 34677 |
| 33726 | Washer—"C" washer for indicator Stock No. 34676 |

# MODEL 9Q4

Chassis No. RC-478

## Nine-Tube, Four-Band, A-C, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave ("X" Band) | 145-405 kc (2,069-740 m) |
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22.0 mc (42.8-13.6 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SK7..... R-F Amplifier
(2) RCA-6SA7..... 1st Detector-Oscillator
(3) RCA-6SK7..... I-F Amplifier
(4) RCA-6SQ7..... 2nd Detector, A.V.C., and A-F Amplifier
(5) RCA-6SF5..... Phase Inverter
(6) RCA-6F6-G..... Output
(7) RCA-6F6-G..... Output
(8) RCA-6U5/6G5..... Tuning Indicator
(9) RCA-5U4-G ..... Rectifier

PILOT LAMPS (2)..... Mazda No. 44, 6.3 volts, 0.25 amp.

LOUDSPEAKER (RL-63K-3)

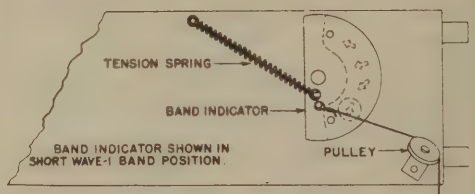
Type..... 8-inch electrodynamic
V.C. Impedance..... 2.2 ohms at 400 cycles

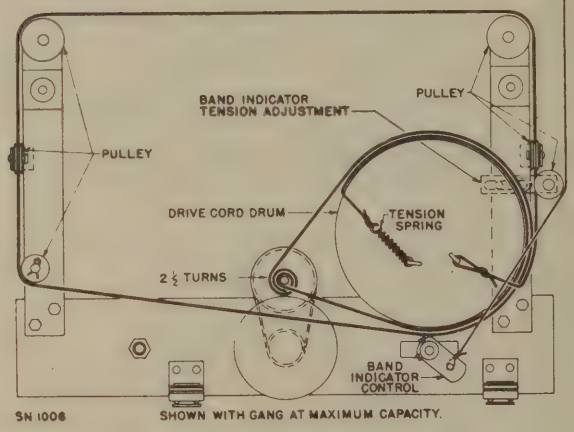
POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 115 watts
Rating B..... 105-125 volts, 25-60 cycles, 115 watts
Rating C..... 105-130, 140-160, 200-250 volts, 40-60 cycles, 115 watts

POWER OUTPUT RATING

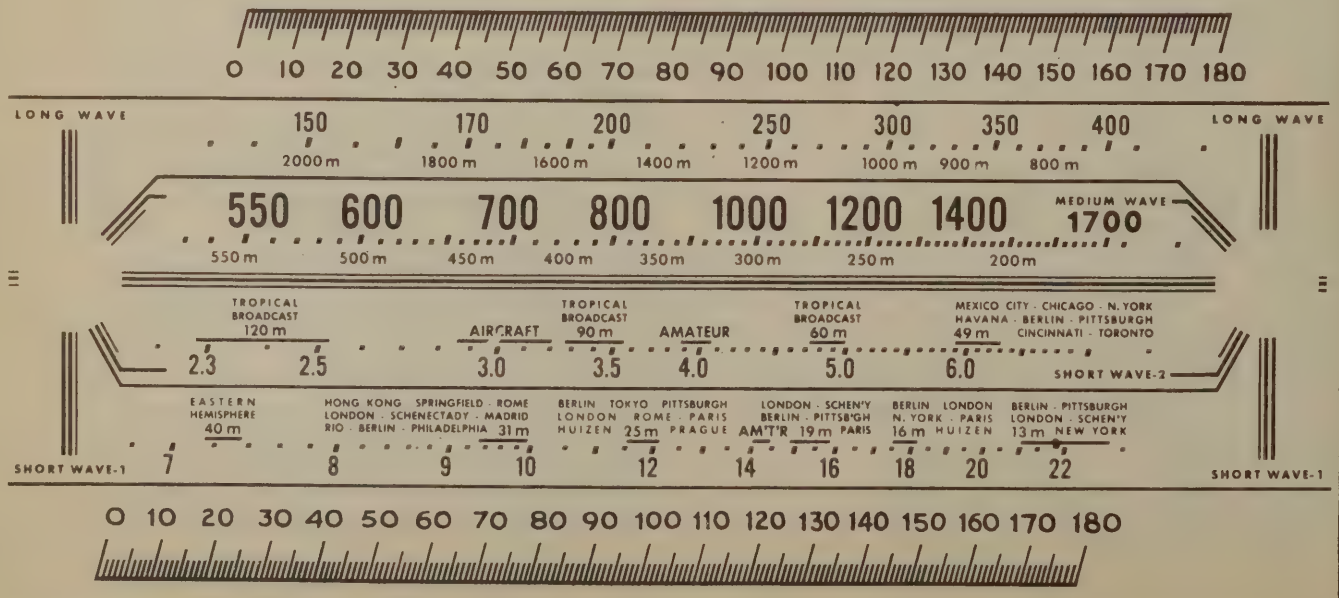
Undistorted..... 10 watts
Maximum ..... 12 watts



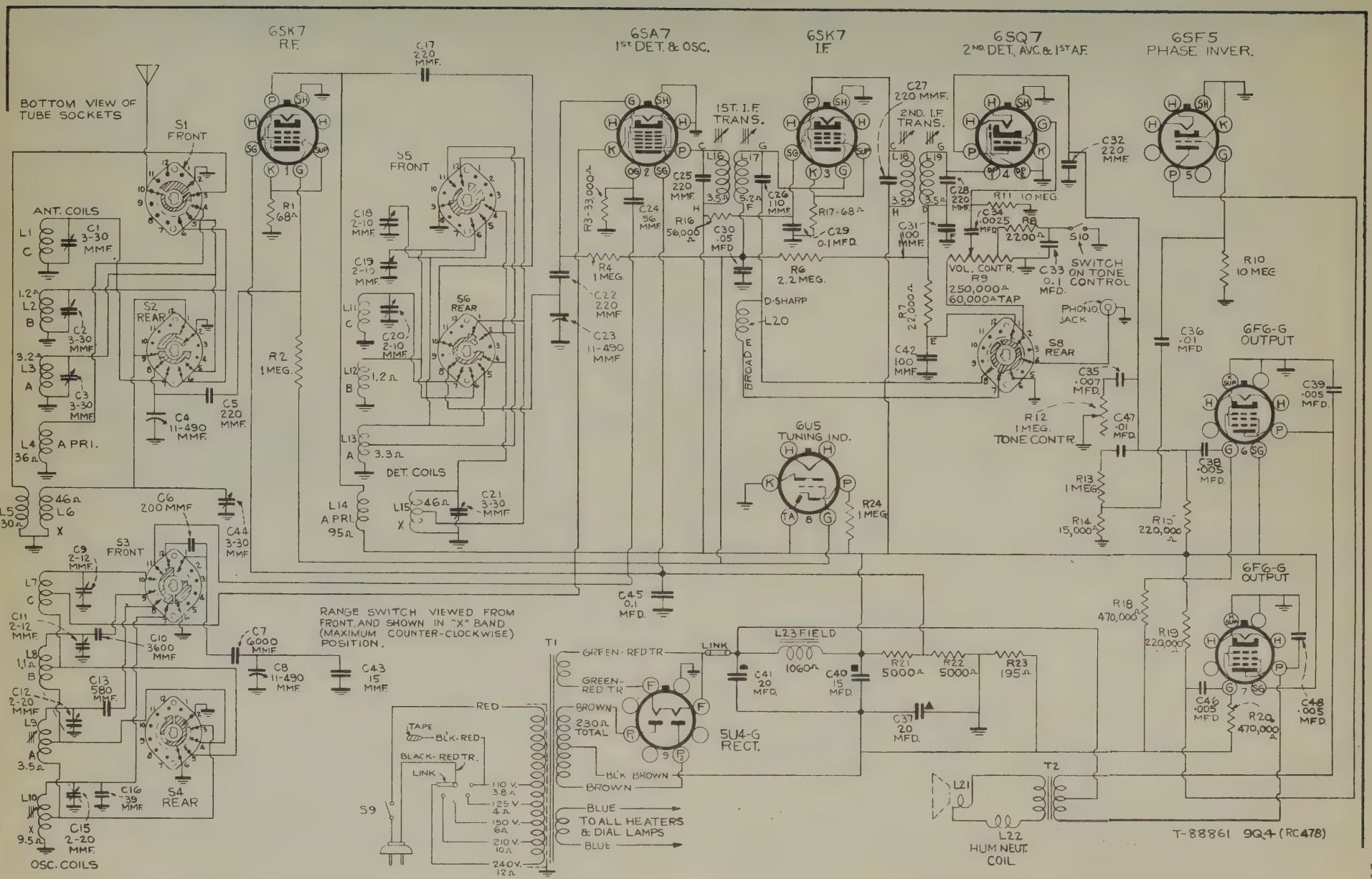




*Drive Cord and Band Indicator Arrangement*

## Calibration Scale

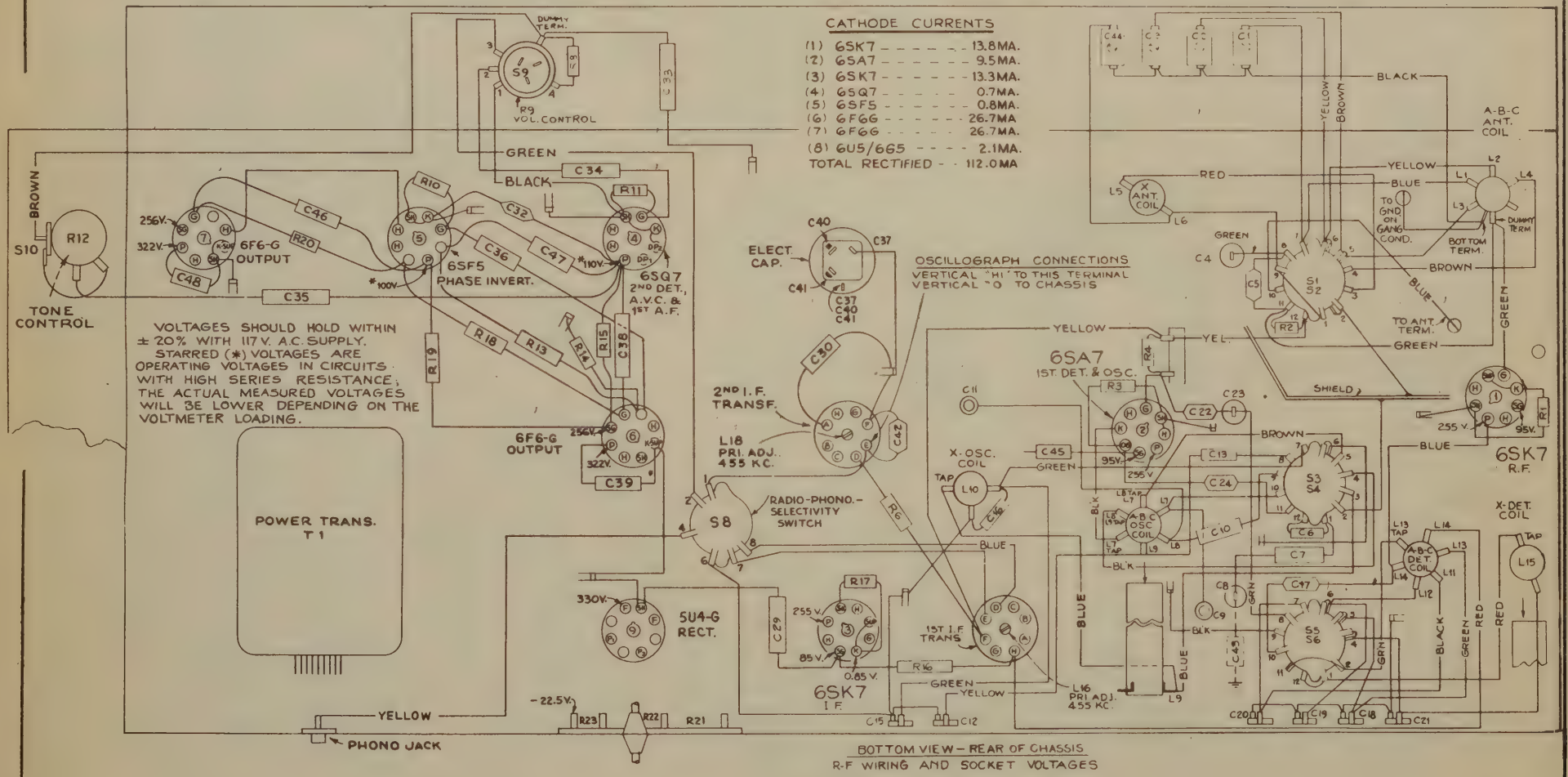

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
LONG WAVE
150 170 200 250 300 350 400
2000m 1800m 1600m 1400m 1200m 1000m 900m 800m
550 600 700 800 1000 1200 1400
MEDIUM WAVE 1700
550m 500m 450m 400m 350m 300m 250m 200m
TROPICAL BROADCAST 120 m
AIRCRAFT
TROPICAL BROADCAST 90 m
AMATEUR
TROPICAL BROADCAST 60 m
MEXICO CITY - CHICAGO - N. YORK HAVANA - BERLIN - PITTSBURGH CINCINNATI - TORONTO 49 m
2.3 2.5 3.0 3.5 4.0 5.0 6.0
SHORT WAVE-2
EASTERN HEMISPHERE 40 m
HONG KONG SPRINGFIELD - ROME LONDON - SCHENECTADY - MADRID RIO - BERLIN - PHILADELPHIA 31 m
BERLIN TOKYO PITTSBURGH LONDON ROME - PARIS HUIZEN 25 m PRAGUE
LONDON - SCHEN'Y BERLIN - PITTSB'GH AM'T'R 19 m PARIS
BERLIN LONDON N. YORK - PARIS 16 m HUIZEN
BERLIN - PITTSBURGH LONDON - SCHEN'Y 13 m NEW YORK
SHORT WAVE-1
7 8 9 10 12 14 16 18 20 22
SHORT WAVE-1
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*


6SK7 R.F.
6SA7 1ST DET. & OSC.
6SK7 I.F.
6SQ7 2ND. DET., AVC. & 1ST A.F.
6SF5 PHASE INVER.
BOTTOM VIEW OF TUBE SOCKETS
ANT. COILS
OSC. COILS
1ST. I.F. TRANS.
2ND. I.F. TRANS.
DET. COILS
A PRI.
VOL. CONTR. R9 250,000Ω 60,000Ω TAP
SWITCH ON TONE CONTROL
PHONO JACK
TONE CONTR.
6G6-G OUTPUT
6U5 TUNING IND.
5U4-G RECT.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "X" BAND (MAXIMUM COUNTER-CLOCKWISE) POSITION.
TO ALL HEATERS & DIAL LAMPS
HUM NEUT. COIL
T-88861 9Q4 (RC478)
PAGE 233-C
9Q4

**Precautionary Lead Dress:**

1. Dress black lead from L11 to C20 away from other leads.
2. Dress the green lead from the middle section of the gang away from any other leads, parts, or chassis.
3. Dress the black diode lead running between the 6SQ7 and terminal G on the 2nd I-F transformer, directly against the chassis.
4. Twist the power leads together and dress them away from the 6SQ7 socket, and also away from the yellow phono input lead.
5. Keep green lead of 6SK7 R-F grid circuit away from blue antenna lead.


CATHODE CURRENTS
(1) 6SK7 - - - - - - 13.8MA.
(2) 6SA7 - - - - - - 9.5MA.
(3) 6SK7 - - - - - - 13.3MA.
(4) 6SQ7 - - - - - 0.7MA.
(5) 6SF5 - - - - - - 0.8MA.
(6) 6F66 - - - - - - 26.7MA
(7) 6F66 - - - - - 26.7MA.
(8) 6U5/665 - - - - 2.1MA.
TOTAL RECTIFIED - - 112.0MA
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY. STARRED (*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER DEPENDING ON THE VOLTMETER LOADING.
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS
TONE CONTROL
R12
S10
6F6-G OUTPUT
6SF5 PHASE INVERT.
6SQ7 2ND DET., A.V.C. & 1ST A.F.
6F6-G OUTPUT
POWER TRANS. T1
5U4-G RECT.
2ND I.F. TRANSF.
L18 PRI. ADJ. 455 KC.
ELECT. CAP.
S8 RADIO-PHONO.-SELECTIVITY SWITCH
6SK7 I.F.
1ST I.F. TRANS
L16 PRI. ADJ. 455 KC.
6SA7 1ST. DET. & OSC.
X-OSC. COIL
A-B-C OSC COIL
A-B-C ANT. COIL
ANT. COIL
TO GND ON GANG COND.
TO ANT. TERM.
BOTTOM TERM.
DUMMY TERM.
6SK7 R.F.
A-B-C DET. COIL
X-DET. COIL
R9 VOL. CONTROL
PHONO JACK
BOTTOM VIEW - REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

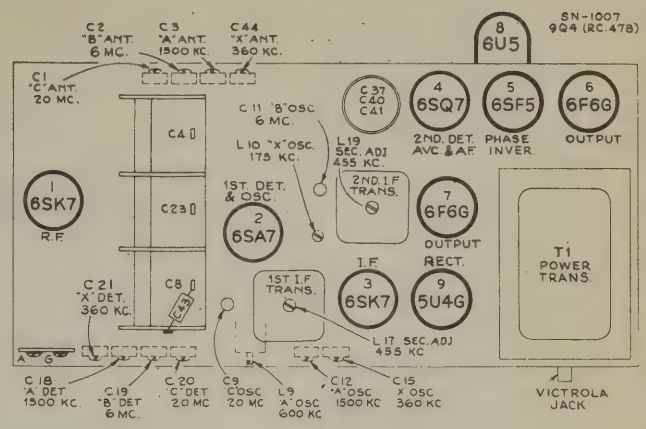
**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

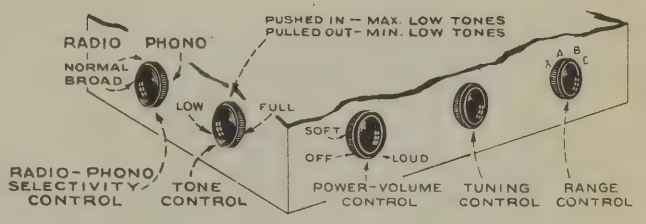
**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



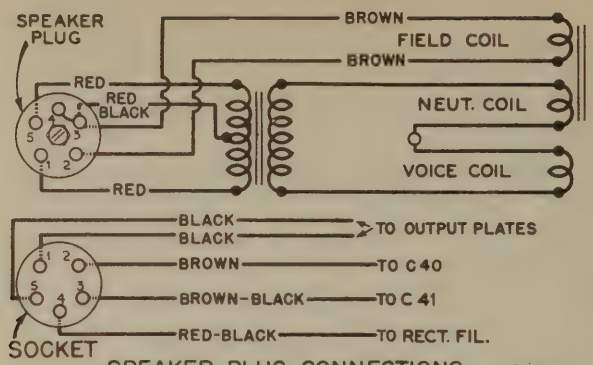




| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Turn tone control to 2nd position (sharp) from maximum counter-clockwise. | | | |
| 2 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" Band Quiet point between 550-750 kc | L18 and L19 (2nd I-F trans.) |
| 3 | 6SA7 grid in series with .01 mfd. | | | L16 and L17 (1st I-F trans.) |
| 4 | Turn tone control to maximum counter-clockwise (broad) position and check I-F response which should be a slightly double-peaked curve. Return tone control to 2nd position (sharp) for the following steps. | | | |
| 5 | Ant. terminal in series with 200 mmfd. | 175 kc | 175 kc (52.5°) "X" Band | L10 (osc.) Rock gang |
| 6 | | 360 kc | 360 kc (148.5°) "X" Band | C15 (osc.) C21 (det.) C44 (ant.) |
| 7 | | 600 kc | 600 kc (32°) "A" Band | L9 (osc.) Rock gang |
| 8 | | 1,500 kc | 1,500 kc (152°) "A" Band | C12 (osc.) C18 (det.) C3 (ant.) |
| 9 | Repeat steps 5, 6, 7, and 8. | | | |
| 10 | Ant. terminal in series with 300 ohms | 6.1 mc | 6.1 mc (151°) "B" Band | C11 (osc.)* C19 (det.) C2 (ant.) |
| 11 | | 20 mc | 20 mc (157°) "C" Band | C9 (osc.)** C20 (det.) C1 (ant.) |

* Use **minimum** capacity peak if two can be obtained. Check to determine that C11 has been adjusted to the correct peak by tuning receiver to approximately 5.19 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to the correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

**Note.**—Oscillator tracks **above** signal on all bands.



SPEAKER PLUG CONNECTIONS SN1005

Additional Replacement Parts:

Stock No.
34662 Cord—Pointer drive cord.....
35194 Dial—Marked in kc.....

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-478)** |
| 34401 | Arm—Arm and hub for band indicator less cable—fastens on range switch shaft..... |
| 34400 | Belt—Drive belt..... |
| 31767 | Board—"Ant.-Grd." terminal board..... |
| 32635 | Cable—Cable and clips for band indicator..... |
| 33821 | Capacitor—Mica trimmer—3 sections 2-10 mmfd. and 1 section 3-30 mmfd. (C18, C19, C20, C21)..... |
| 12714 | Capacitor—Air trimmer, 2-12 mmfd. (C9, C11) |
| 33818 | Capacitor—Mica trimmer, 2 sections 2-20 mmfd. each (C12, C15)..... |
| 12896 | Capacitor—15 mmfd. (C43)..... |
| 33822 | Capacitor—Mica trimmer, 4 sections 3-30 mmfd. each (C1, C2, C3, C44)..... |
| 13545 | Capacitor—39 mmfd. (C16)..... |
| 12723 | Capacitor—56 mmfd. (C24)..... |
| 12720 | Capacitor—100 mmfd. (C42, C31)..... |
| 32239 | Capacitor—110 mmfd. (C26)..... |
| 30232 | Capacitor—200 mmfd. (C6)..... |
| 12694 | Capacitor—220 mmfd. (C5, C17, C22, C32).. |
| 33760 | Capacitor—220 mmfd. (C25, C27, C28)..... |
| 33235 | Capacitor—580 mmfd. (C13)..... |
| 12811 | Capacitor—3,600 mmfd. (C10)..... |
| 31405 | Capacitor—6,000 mmfd. (C7)..... |
| 34459 | Capacitor—.0025 mfd. (C34)..... |
| 33584 | Capacitor—.005 mfd. (C38, C39, C46, C48).. |
| 5148 | Capacitor—.007 mfd. (C35)..... |
| 4937 | Capacitor—.01 mfd. (C36, C47)..... |
| 32787 | Capacitor—.05 mfd. (C30)..... |
| 4839 | Capacitor—0.1 mfd. (C29, C33, C45)..... |
| 34393 | Capacitor—Electrolytic—2 sections 20 mfd. and 1 section 15 mfd. (C37, C40, C41)..... |
| 33762 | Coil—Antenna coil A-B-C Bands (L1, L2, L3, L4)..... |
| 32823 | Coil—Antenna coil X Band (L5, L6)..... |
| 33763 | Coil—Detector coil A-B-C Bands (L11, L12, L13, L14)..... |
| 33765 | Coil—Detector coil X Band (L15)..... |
| 33764 | Coil—Oscillator coil A-B-C Bands (L7, L8, L9)..... |
| 32931 | Coil—Oscillator coil X Band (L10)..... |
| 33756 | Condenser—3-gang variable tuning condenser (C4, C8, C23)..... |
| 34595 | Control—Tone control (R12)..... |
| 32713 | Core—Adjustable core and stud for A-B-C Band coil..... |
| 34392 | Drum—Variable condenser drive drum..... |
| 11891 | Lamp—Dial lamp..... |
| 14028 | Nut—Clamping nut for air trimmer..... |
| 31817 | Plate—Cushion socket mounting plate, less socket..... |
| 12493 | Plug—5-contact female plug for speaker cable.. |
| 34399 | Pulley—Drive belt pulley and set screws for tuning knob shaft..... |
| 34398 | Pulley—Drive belt pulley and set screws for intermediate drive shaft..... |
| 31373 | Pulley—Drive cord pulley for L.H. support.... |
| 34402 | Pulley—Drive cord pulley and bracket for R.H. support..... |
| 34394 | Pulley—L.H. support and drive cord pulleys (2) assembled, less loose pulley..... |
| 34395 | Pulley—R.H. support and drive cord pulleys (2) assembled, less loose pulley and bracket..... |
| 14281 | Resistor—68 ohms, ½ watt (R1, R17)..... |
| 13716 | Resistor—2,200 ohms, ½ watt (R8)..... |
| 34189 | Resistor—Voltage divider, 2 sections 5,000 ohms and 1 section 195 ohms (R21, R22, R23)... |
| 12695 | Resistor—15,000 ohms, ½ watt (R14)..... |
| 13998 | Resistor—22,000 ohms, ½ watt (R7)..... |
| 12454 | Resistor—33,000 ohms, ½ watt (R3)..... |
| 30650 | Resistor—56,000 ohms, ½ watt (R16)..... |
| 12264 | Resistor—220,000 ohms, ½ watt (R15, R19).. |
| 12285 | Resistor—470,000 ohms, ½ watt (R18, R20).. |
| 12013 | Resistor—1 megohm, 1/10 watt (R24)..... |
| 13730 | Resistor—1 megohm, ½ watt (R2, R4, R13).. |
| 12679 | Resistor—2.2 megohm, ½ watt (R6)..... |
| 13601 | Resistor—10 megohm, ½ watt (R11, R10).... |
| 30340 | Retainer—Retaining clip for pulley, Stock No. 31373..... |
| 34396 | Shaft—Intermediate tuning drive shaft, and drive cord pulley—less drive belt pulley and set screws..... |
| 34397 | Shaft—Intermediate tuning drive shaft, and flywheel—less drive belt pulley and set screws.. |
| 31364 | Socket—Dial lamp socket..... |
| 34864 | Socket—Magic Eye socket..... |
| 14278 | Socket—Phono. input socket..... |
| 31251 | Socket—Tube socket..... |
| 31418 | Spring—Pointer drive cord tension spring..... |
| 34391 | Switch—Phono. switch and fidelity control switch (S8)..... |
| 34390 | Switch—Range switch (S1, S2, S3, S4, S5, S6) |
| 34596 | Switch—Slide switch for tone control (S10)... |
| 33759 | Transformer—First i-f transformer (L16, L17, L20, C25, C26)..... |
| 33761 | Transformer—Second i-f transformer (L18, L19, C27, C28, C31, R7)..... |
| 34183 | Transformer—Power transformer — 100/130, 140/160, 195/250 volts, 50/60 cycles (T1). |
| 34389 | Volume Control—Volume control and power switch (R9, S9)..... |
| 33726 | Washer—"C" washer for tuning shaft..... |
| | **SPEAKER ASSEMBLIES (RL63K3)** |
| 31825 | Cap—Dust cap..... |
| 34615 | Cone—Cone complete with voice coil (L2)..... |
| 31539 | Plug—5-prong male plug for speaker..... |
| 34691 | Speaker—8-inch dynamic complete with cone and voice coil—less output transformer..... |
| 14534 | Transformer—Output transformer (T2)..... |
| | **MISCELLANEOUS ASSEMBLIES** |
| MI-8105 | Adapter—European adapter for power cord.... |
| 30766 | Cap—"Magic Eye" rubber cap..... |
| 30716 | Clip—"Magic Eye" clip..... |
| 34486 | Dial—Glass dial scale (English)..... |
| 34504 | Dial—Glass dial scale (Greek)..... |
| 34485 | Frame—Dial frame complete with brackets and pulleys less dial, indicator pointer, pointer rods, band indicator, band indicator spring and Magic Eye clip..... |
| 34488 | Indicator—Band indicator..... |
| 34487 | Indicator—Station selector indicator pointer... |
| 34490 | Knob—Tone control or radio phonograph knob |
| 34489 | Knob—Tuning range switch or volume control and power switch knob..... |
| 4393 | Screw—No. 8-32 headless set screw for knob, Stock No. 34490..... |
| 33438 | Screw—Magic Eye clip screw..... |
| 34491 | Shaft—Indicator pointer guide shaft..... |
| 30756 | Spring—Band indicator spring..... |
| 4982 | Spring—Retaining spring for knob, Stock No. 34489..... |
| 33726 | Washer—Band indicator retaining washer..... |

# "Little Nipper" Models 9SX-1, -2, -3, -4, -5, -6, -7, and -8

## Five-Tube, Two-Band, AC-DC Superheterodyne Receivers

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast (A) ..... 540-1,720 kc
Short Wave (B) ..... 2.3-6.25 mc

INTERMEDIATE FREQUENCY ..... 456 kc

TUBE COMPLEMENT

(1) RCA-6A8 ..... 1st-Detector—Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6Q7 ..... 2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6 ..... Power Output
(5) RCA-25Z6 ..... Half-Wave Rectifier
Dial Lamp (1) ..... Mazda 40, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted ..... 1.5 watt
Maximum ..... 2.0 watts

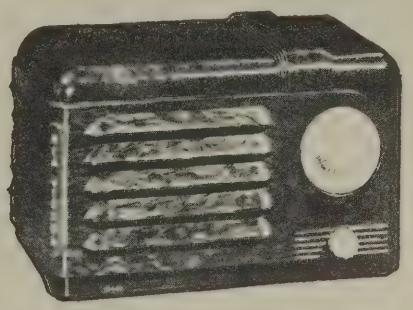
LOUDSPEAKER

Type ..... 4-inch Electrodynamic

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions ..... | 4¾ inches .. | 8 inches .. | 4½ inches |

Weight ..... 7 pounds (shipping)

**Model 9SX-1,** Molded cabinet, walnut finish, ivory knobs.
**Model 9SX-2,** Molded cabinet, walnut body, ivory front, walnut knobs.
**Model 9SX-3,** Molded cabinet, ivory finish, red knobs.
**Model 9SX-4,** Molded cabinet, red body, ivory front, red knobs.
**Model 9SX-5,** Molded cabinet, black body, marble front, jet knobs.
**Model 9SX-6,** Molded cabinet, blue body, onyx front, blue knobs.
**Model 9SX-7,** Molded cabinet, onyx finish, maroon knobs.
**Model 9SX-8,** Molded cabinet, marble finish, jet knobs.



### Replacement Parts

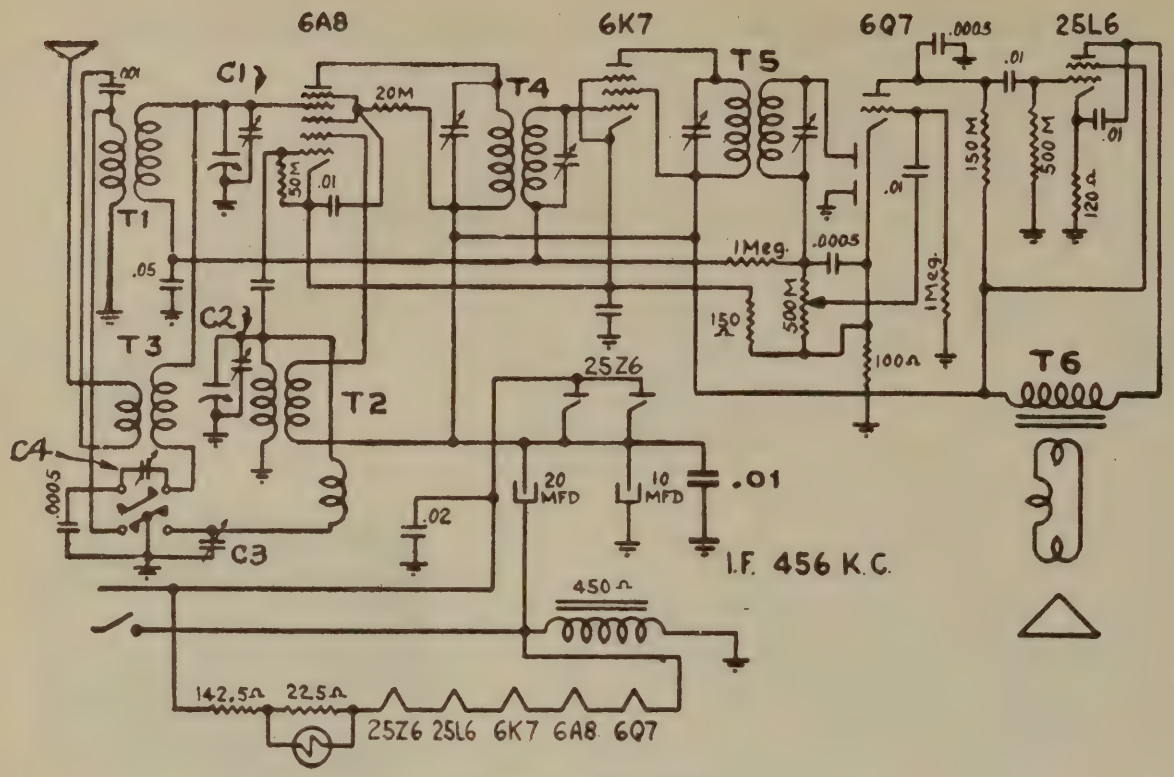
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| 31193 | Antenna—35 ft. antenna wire—wound on reel | | 32444 | Knob—Station selector knob—Black | |
| X-569 | Cabinet—Walnut and Ivory cabinet (9SX-2) | | 32445 | Knob—Station selector knob—Maroon | |
| X-572 | Cabinet—Blue and Onyx cabinet (9SX-6) | | 32446 | Knob—Volume control or range switch knob—Walnut | |
| X-575 | Cabinet—Onyx cabinet (9SX-7) | | 32447 | Knob—Volume control or range switch knob—Ivory | |
| X-570 | Cabinet—Walnut cabinet (9SX-1) | | 32448 | Knob—Volume control or range switch knob—Red | |
| X-573 | Cabinet—Ivory cabinet (9SX-3) | | 32449 | Knob—Volume control or range switch knob—Blue | |
| X-576 | Cabinet—Marble cabinet (9SX-8) | | 32450 | Knob—Volume control or range switch knob—Black | |
| X-571 | Cabinet—Red and Ivory cabinet (9SX-4) | | 32451 | Knob—Volume control or range switch knob—Maroon | |
| X-574 | Cabinet—Black and Marble cabinet (9SX-5) | | 4340 | Lamp—Dial lamp—Mazda 40 | |
| 32392 | Capacitor—.0005 mfd. | | 30540 | Resistor—100 ohms, 1/3 watt | |
| 32396 | Capacitor—.0005 mfd. mica capacitor | | 32397 | Resistor—120 ohms, 1/2 watt, Flexohm | |
| 32393 | Capacitor—.001 mfd. | | 30880 | Resistor—150 ohms, 1/3 watt | |
| 4858 | Capacitor—.01 mfd. | | 30492 | Resistor—20,000 ohms, 1/3 watt | |
| 31796 | Capacitor—.02 mfd. | | 3594 | Resistor—50,000 ohms, 1/3 watt | |
| 4886 | Capacitor—.05 mfd. | | 30493 | Resistor—150,000 ohms, 1/3 watt | |
| 4839 | Capacitor—0.1 mfd. | | 3048 | Resistor—500,000 ohms, 1/3 watt | |
| 32386 | Capacitor—10-20 mfd., Electrolytic | | 30652 | Resistor—1 megohm, 1/3 watt | |
| 32394 | Capacitor—Trimmer capacitor 1,500 K.C. adjustment (C4) | | 32398 | Screw—No. 6-32 fibre screw—back cover mounting | |
| 32395 | Capacitor—Trimmer capacitor 1,720 K.C. adjustment (C3) | | 32390 | Socket—8-prong moulded Octal tube socket | |
| 32387 | Coil—Antenna coil (T1) | | 32380 | Speaker—Dynamic loudspeaker | |
| 32388 | Coil—Oscillator coil (T2) | | 32381 | Transformer—Output transformer (T6) | |
| 32389 | Coil—Short wave antenna coil (T3) | | 32382 | Transformer—First i.f. transformer (T4) | |
| 32379 | Condenser—2-gang variable tuning condenser | | 32383 | Transformer—Second i.f. transformer (T5) | |
| 32384 | Cord—Resistance power cord | | 32385 | Volume Control and Switch | |
| 32399 | Dial—Indicator dial scale | | | | |
| 32440 | Knob—Station selector knob—Walnut | | | | |
| 32441 | Knob—Station selector knob—Ivory | | | | |
| 32442 | Knob—Station selector knob—Red | | | | |
| 32443 | Knob—Station selector knob—Blue | | | | |

**Additional Replacement Parts:**

Stock No.

32666 Spring—Tuning knob spring
32667 Spring—Volume or range knob spring
32948 Switch—Range switch
32949 Socket—Dial lamp socket




## Alignment Procedure

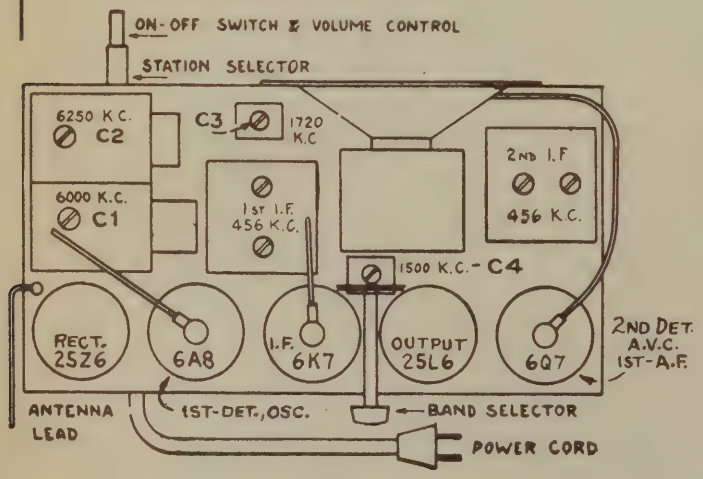
Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis through .01 mfd., and keep the output as low as possible to avoid a-v-c action.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 456 kc | Quiet point between 1,650-1,720 kc, with range switch at broadcast position (counter-clockwise from rear). | Two trimmers on 2nd I-F trans. |
| 2 | 6A8 1st-Det. grid cap, in series with .01 mfd. | 456 kc | | Two trimmers on 1st I-F trans. |
| 3 | Antenna Term. on antenna trans., in series with 400 ohms. | 6,250 kc | Max. clockwise (out of mesh) "B" band | C2 (osc. gang trimmer)* |
| 4 | | 6,000 kc | Resonance on 6,000 kc signal | C1 (ant. gang trimmer)** |
| 5 | Antenna Term. on antenna trans., in series with 90 mmf. | 1,720 kc | Max. clockwise (out of mesh) | C3 |
| 6 | | 1,500 kc | Resonance on 1,500 kc signal. | C4 |

* Use minimum capacity peak if two peaks can be obtained.

** After this adjustment, check for image by leaving test oscillator at 6,000 kc, and shifting receiver dial to 5,088 kc, where a weaker signal should be received.



*Bottom view of tube sockets*

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Resistor in Power Cord.—The power cord contains a resistor which becomes warm during operation.

Antenna.—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

# Models 9TX-1, -2, -3, -4, -5, 9TX-21, -22, and -23

Chassis No. RC-401 RC-403 RC-403 RC-403A

## Five-Tube, Single-Band, AC-DC Superheterodyne Receivers

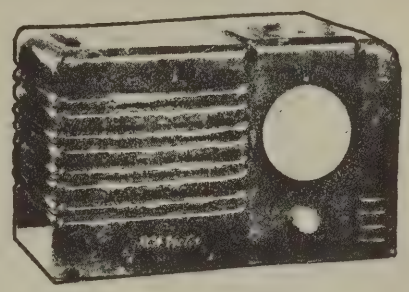
**Model 9TX-1,** Molded cabinet, walnut finish, mottled tan dial and knob.

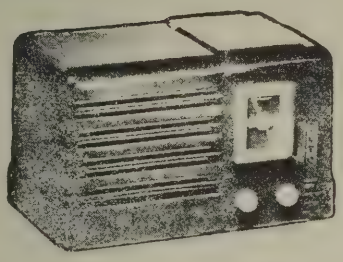
**Model 9TX-2,** Molded cabinet, ivory finish, ivory dial and knob.

**Model 9TX-3,** Two-tone wood cabinet, piano finish, mottled tan dial and knob.

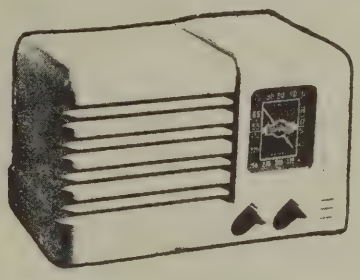
**Model 9TX-4,** Molded Arizona cream onyx cabinet, maroon dial and knob.

**Model 9TX-5,** Molded green onyx cabinet, ivory dial and knob.

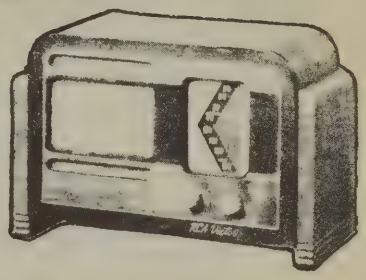




*Model 9TX-21, Molded Cabinet, Walnut Finish, Mottled Tan Knobs*



*Model 9TX-22, Molded Cabinet, Ivory Finish, Ivory Knobs*



*Model 9TX-23, Wood Cabinet, Mottled Tan Knobs, Thermometer-Type Tuning Indicator*

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 530-1,720 kc

TUBE COMPLEMENT

(1) RCA-6A8 ..... 1st-Detector—Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6 ..... Power Output
(5) RCA-25Z6 ..... Half-Wave Rectifier
Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)

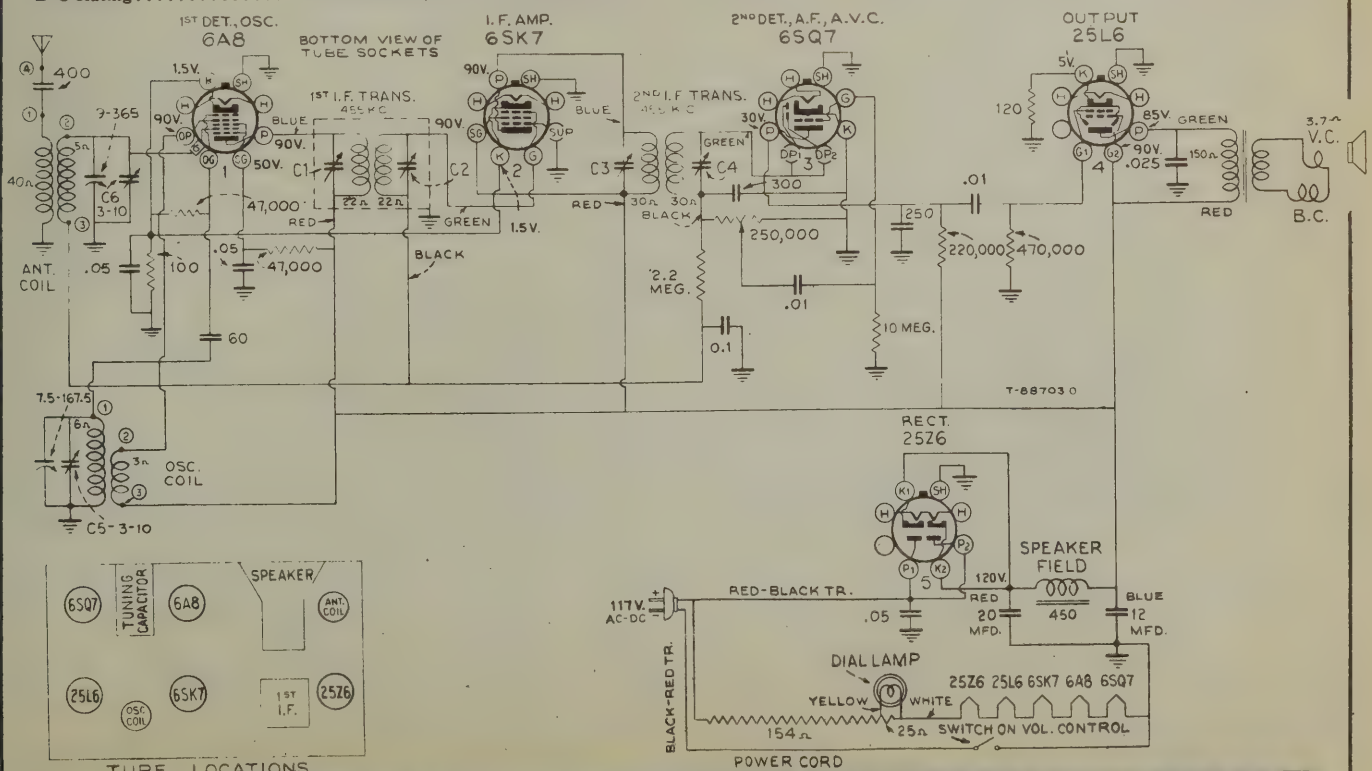
Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER

Type ..... 4-inch Electrodynamic

| | | Height | Width | Depth |
|---|---|---|---|---|
| Cabinet Dimensions | 9TX-1, -2 | 5 inches | 8½ inches | 4¾ inches |
| | 9TX-3 | 5¾ inches | 8¾ inches | 4¾ inches |
| | 9TX-4, -5 | 5½ inches | 8½ inches | 4½ inches |

Weight ..... 7 pounds (shipping)



# 9TX-1 TO-5, 9TX 21, -22, -23

### Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 6SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.
3. Keep leads away from adjusting screws to allow easy access.
4. Dress output plate lead along front apron and away from 6A8.
5. Dress parts at ends of chassis to clear cabinet bosses.

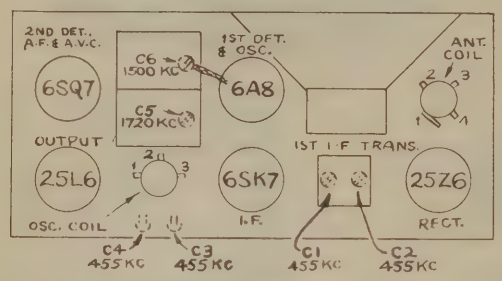
**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

**Resistor in Power Cord.**—The power cord contains a resistor which becomes warm during operation.

**Antenna.**—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.




*Trimmer Locations*

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible. The antenna should be rolled up and kept at least one foot from chassis during alignment.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 6A8 1st-Det. grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna term. of ant. trans. in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal. | C6 (antenna) |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

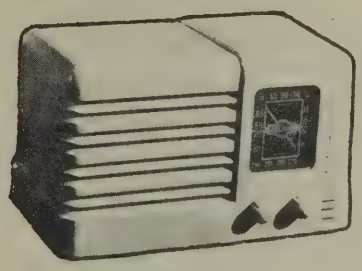
| STOCK No. | DESCRIPTION |
|---|---|
| | **MODELS 9TX-1 TO 5** |
| 32572 | Coil—Antenna coil |
| 32573 | Coil—Oscillator coil |
| 13057 | Condenser—60 mmfd. |
| 12488 | Condenser—250 mmfd. |
| 12952 | Condenser—300 mmfd. |
| 30433 | Condenser—400 mmfd. |
| 4858 | Condenser—.01 mfd. |
| 4870 | Condenser—.025 mfd. |
| 4886 | Condenser—.05 mfd. |
| 4839 | Condenser—0.1 mfd. |
| 32576 | Condenser—Electrolytic, one section 20 mfd., one section 12 mfd. |
| 32579 | Condenser—Variable tuning condenser |
| 32577 | Cord—Resistance power cord |
| 32566 | Dial—Ivory dial for 9TX2 and 9TX5 |
| 32567 | Dial—Maroon dial for 9TX4 |
| 32568 | Dial—Tan dial for 9TX1 and 9TX3 |
| 32569 | Knob—Ivory volume control knob for 9TX2 and 9TX5 |
| 32570 | Knob—Maroon volume control knob for 9TX4 |
| 32571 | Knob—Tan volume control knob for 9TX1 and 9TX3 |
| 31480 | Lamp—Dial lamp—Mazda 47 |
| 12409 | Lead—Antenna lead |
| 14439 | Resistor—100 ohms, ½ watt |
| 32535 | Resistor—120 ohms, wire wound |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 31199 | Shield—Dial lamp shield — Models 9TX1, 9TX2, 9TX4, and 9TX5 |
| 32537 | Socket—Tube socket |
| 32575 | Speaker—Complete with transformer |
| 32574 | Transformer—First i.f. transformer |
| 32581 | Transformer—Output transformer |
| 32534 | Transformer—Second i.f. transformer |
| 32578 | Volume Control and Power Switch—Models 9TX1, 9TX2, and 9TX3 |
| 32580 | Volume Control and Power Switch—Models 9TX4 and 9TX5 |
| 32667 | Spring—Volume knob spring |
| 32803 | Spring—Tuning knob spring |
| 33006 | Foot—Rubber foot for 9TX-3 only |
| | **MODELS 9TX-21, -22, -23** |
| 32572 | Coil—Antenna coil |
| 32573 | Coil—Oscillator coil |
| 13057 | Condenser—60 mmfd. |
| 12488 | Condenser—250 mmfd. |
| 12952 | Condenser—300 mmfd. |
| 30433 | Condenser—400 mmfd. |
| 4858 | Condenser—.01 mfd. |
| 4870 | Condenser—.025 mfd. |
| 4886 | Condenser—.05 mfd. |
| 4839 | Condenser—0.1 mfd. |
| 32576 | Condenser—Electrolytic, one section 20 mfd., one section 12 mfd. |
| 32944 | Condenser—2-gang variable tuning |
| 32634 | Cord—Drive cord |
| 32577 | Cord—Resistance power cord |
| 32942 | Dial—Glass dial scale—Models 9TX21, 9TX22 |
| 33289 | Dial—Glass dial scale—Model 9TX23 |
| 33297 | Drive—Dial drive mechanism comprising drive drum, cord, shaft, dial color plate, back plate and pulleys assembled—Model 9TX23 |
| 32946 | Drum—Variable condenser drive drum and indicator disc—Models 9TX21 and 9TX22 |
| 33006 | Feet—Rubber feet for 9TX23 |
| 33295 | Indicator—Dial pointer—Model 9TX23 |
| 32447 | Knob—Ivory knob (tuning or volume) Model 9TX22 |
| 32571 | Knob—Tan knob (tuning or volume) Models 9TX21 and 9TX23 |
| 31480 | Lamp—Dial lamp—Mazda 47 |
| 12409 | Lead—Antenna lead |
| 32943 | Nut—Speed nut to fasten dial—Models 9TX21 and 9TX22 |
| 33292 | Plate—Dial color plate—Model 9TX23 |
| 33294 | Pulley—Drive cord pulley—Model 9TX23 |
| 14439 | Resistor—100 ohms, ½ watt |
| 32535 | Resistor—120 ohms, wire wound |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 32945 | Shaft—Tuning knob shaft—Models 9TX21 and 9TX22 |
| 33293 | Shaft—Tuning knob shaft and bushing—Model 9TX23 |
| 33290 | Socket—Dial lamp socket |
| 32537 | Socket—Tube socket |
| 32575 | Speaker—Complete with transformer |
| 32947 | Spring—Drive cord tension spring—Models 9TX21 and 9TX22 |
| 31615 | Spring—Drive cord tension spring—Model 9TX23 |
| 33296 | Spring—Drive drum retaining spring—Model 9TX23 |
| 32667 | Spring— drive drum retaining spring |
| 32574 | Transformer—First i. f., transformer |
| 32581 | Transformer—Output transformer |
| 32534 | Transformer—Second i. f. transformer |
| 32578 | Volume Control and power switch—Models 9TX21 and 9TX22 |
| 33291 | Volume Control and switch—Model 9TX23 |
| 31646 | Spring—Dial knob spring |

# MODELS 9TX-31, 9TX-32, 9TX-33

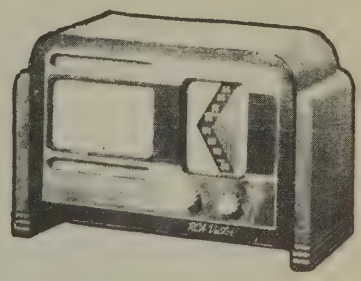
## Chassis No. RC-405, RC-405A, RC-405B

## Five-Tube, Single-Band, AC-DC Superheterodyne Receivers

*Model 9TX-31*
*Walnut Finish, Tan Knobs*



*Model 9TX-32*
*Ivory Finish, Ivory Knobs*



*Model 9TX-33*
*Heart Walnut, Ornamental Sides*
*Tan Knobs*

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 530-1,720 kc

TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st-Detector—Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-35L6GT ..... Power Output
(5) RCA-35Z4GT ..... Half-Wave Rectifier

Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS
A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER (39105-2)
Type ..... 4-inch Electrodynamic

| | | Height | Width | Depth |
|---|---|---|---|---|
| Cabinet Dimensions | 9TX-31 | 5⅛ inches | 8⅝ inches | 4½ inches |
| | 9TX-32 | 5⅛ inches | 8⅝ inches | 4½ inches |
| | 9TX-33 | 6½ inches | 9⅜ inches | 4¾ inches |

Weight (net) ..... 9TX-31, 32 .. 43¾ pounds; 9TX-33 .. 51½ pounds

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| X-638 | Cabinet for 9TX31 (Walnut Finish).....(net) | | 33292 | Plate—Dial color plate (Model 9TX33)..... | |
| X-639 | Cabinet for 9TX32 (Ivory Finish).....(net) | | 33294 | Pulley—Drive cord pulley (Model 9TX33).... | |
| X-640 | Cabinet for 9TX33 (Wood—Walnut Finish)... (net) | | 32970 | Resistor—Dial lamp resistor—24 ohms..... | |
| | | | 32971 | Resistor—Series dropping resistor—42 ohms... | |
| 12488 | Capacitor—250 mmfd. ..... | | 13428 | Resistor—150 ohms, ½ watt..... | |
| 12952 | Capacitor—300 mmfd. ..... | | 30538 | Resistor—330 ohms, ½ watt..... | |
| 4838 | Capacitor—.005 mfd..... | | 13998 | Resistor—22,000 ohms, ½ watt..... | |
| 4937 | Capacitor—.01 mfd..... | | 12412 | Resistor—47,000 ohms, ½ watt..... | |
| 12484 | Capacitor—0.25 mfd..... | | 12264 | Resistor—220,000 ohms, ½ watt..... | |
| 32572 | Coil—Antenna coil ..... | | 12285 | Resistor—470,000 ohms, ½ watt..... | |
| 32962 | Coil—Oscillator coil..... | | 12679 | Resistor—2.2 meg., ½ watt..... | |
| 13057 | Condenser—60 mmfd..... | | 13601 | Resistor—1.0 meg., ½ watt..... | |
| 30433 | Condenser—400 mmfd. ..... | | 32945 | Shaft—Tuning knob shaft (Models 9TX31 and 9TX32) ..... | |
| 4870 | Condenser—.025 mfd..... | | 33293 | Shaft—Tuning knob shaft and bushing (Model 9TX33) ..... | |
| 4839 | Condenser—0.1 mfd..... | | 32969 | Socket—Dial lamp socket ..... | |
| 32576 | Condenser—Electrolytic, one section 20 mfd., one section 12 mfd..... | | 14278 | Socket—Phonograph socket..... | |
| | | | 32537 | Socket—Tube socket ..... | |
| 32968 | Condenser—2-gang variable tuning..... | | 32963 | Speaker—Complete with transformer..... | |
| 32634 | Cord—Drive cord..... | | 32947 | Spring—Drive cord tension spring (Models 9TX31 and 9TX32)..... | |
| 32942 | Dial—Glass dial scale (Models 9TX31, 9TX32) | | 31615 | Spring—Drive cord tension spring (Model 9TX33) ..... | |
| 33289 | Dial—Glass dial scale (Model 9TX33)..... | | 33296 | Spring—Drive drum retaining spring (Model 9TX33) ..... | |
| 33297 | Drive—Dial drive mechanism—comprising drive drum, cord, shaft, dial color plate, back plate and pulleys assembled (Model 9TX33)..... | | 32667 | Spring— drive drum retaining spring.. | |
| | | | 32966 | Transformer—First i-f transformer..... | |
| 32946 | Drum—Variable condenser drive drum and indicator disc (Models 9TX31 and 9TX32)..... | | 32967 | Transformer—Second i-f transformer..... | |
| | | | 32964 | Transformer—Output transformer..... | |
| 33006 | Feet—Rubber feet for 9TX33..... | | 32578 | Volume Control and power switch (Models 9TX31 and 9TX32) ..... | |
| 33295 | Indicator—Dial pointer (Model 9TX33)..... | | | | |
| 32447 | Knob—Ivory knob (tuning or volume) (Model 9TX32) ..... | | | | |
| 32571 | Knob—Tan knob (tuning or volume) (Models 9TX31 and 9TX33)..... | | | | |
| 31480 | Lamp—Dial lamp—Mazda 47..... | | | | |
| 12409 | Lead—Antenna lead..... | | | | |
| 32943 | Nut—Speed nut to fasten dial (Models 9TX31 and 9TX32)..... | | | | |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 33139 | Rubber grommet for tuning shaft... |
| 34174 | Output transformer for speaker marked 39105-4 ..... |
| 31646 | Spring—Dial knob spring..... |
| 33291 | Volume control and switch for 9TX-33 |

**Circuit Revisions:**

The following circuit modification is suggested on Model 9TX30 series receivers where repeated failure of the No. 32970 line resistor and No. 31480 pilot lamp has occurred:

MATERIAL REQUIRED:

| Quantity | Part | RCA Stock No. |
|---|---|---|
| 1 | Rectifier tube | 35Z5GT |
| 1 | Resistor | 33558 |
| 1 | No. 51 Mazda pilot lamp | 11765 |

# 9TX 31, -32, -33

**Circuit Revisions:**

PROCEDURE:

(1) Remove all connections from terminals No. 2 and No. 4 of terminal board and terminals No. 2, No. 5, and No. 6 of 35Z4GT socket.

(2) Resolder pilot lamp lead, removed from terminal No. 4 of terminal board, and power lead removed from terminal No. 6 of rectifier socket, to terminal No. 2 of rectifier socket.

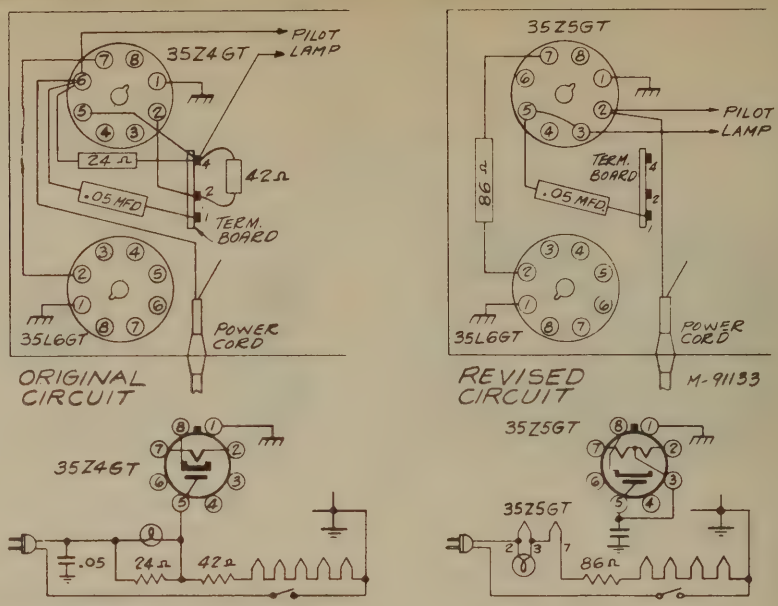
(3) Resolder pilot lamp lead, removed from terminal No. 6 of rectifier socket, to terminal No. 3 of rectifier socket. Add jumper between No. 5 and No. 3 of rectifier socket.

(4) Resolder .05 mfd. capacitor, removed from terminal No. 6 of rectifier socket, to terminal No. 5 of rectifier socket.

(5) Replace jumper between terminal No. 7 of rectifier socket and terminal No. 2 of 35L6GT socket, with 86 ohm resistor (Stock No. 33558).

(6) Replace 35Z4GT rectifier tube with a 35Z5GT rectifier tube.

(7) Replace No. 47 Mazda pilot lamp with a No. 51 Mazda pilot lamp (Stock No. 11765).




## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

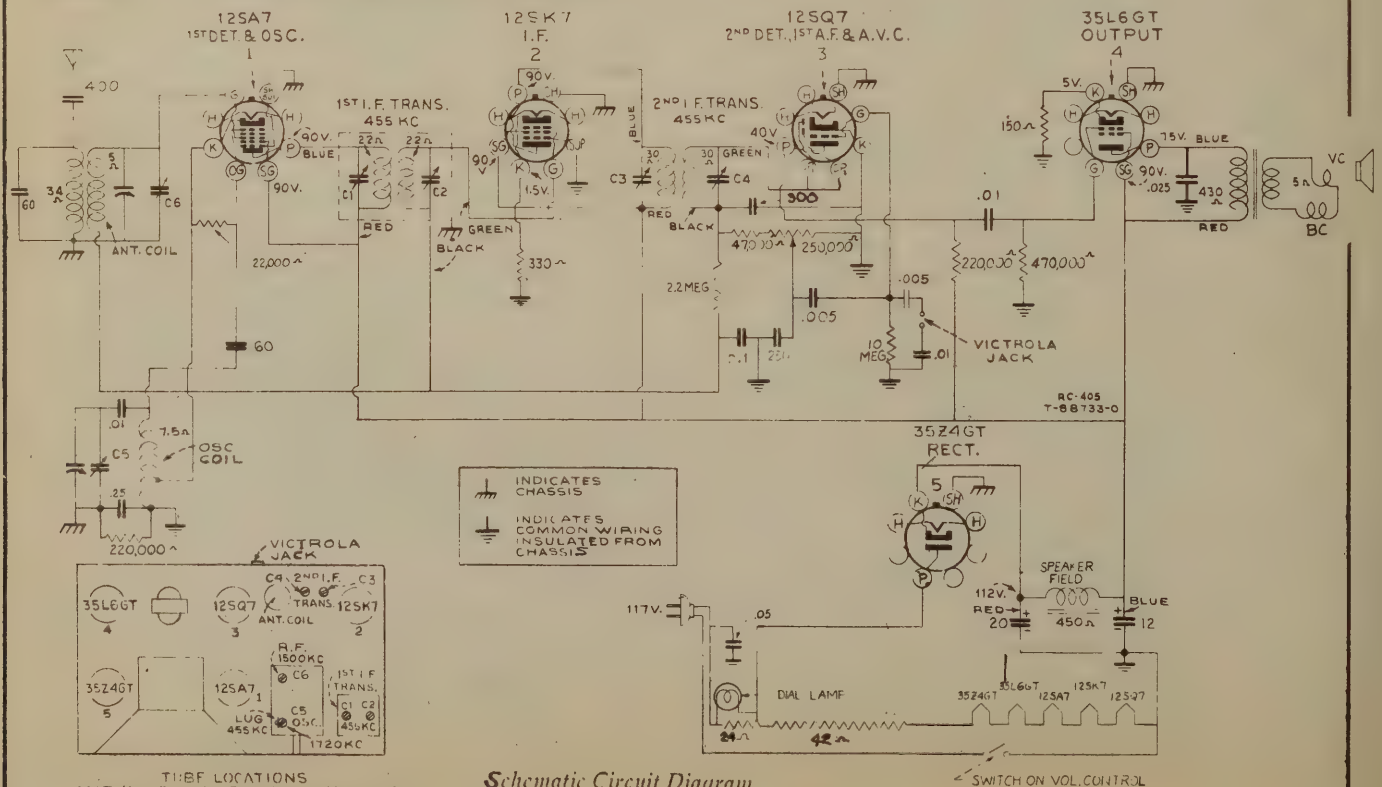
| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | Tuning condenser stator (osc.) in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna term. of ant. trans. in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C6 (antenna) |

### Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.

**Power-Supply Polarity.** — For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

**Antenna.**—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.



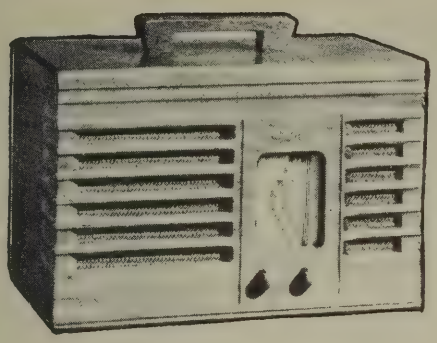

TUBE LOCATIONS AND ALIGNMENT SCREW POSITIONS

*Schematic Circuit Diagram*

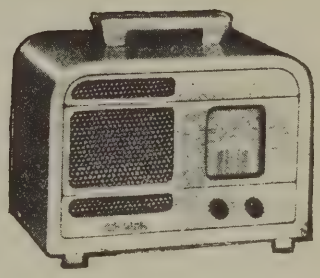
# Models 9TX-50 40X-30 40X-31 and 40X-50 Series

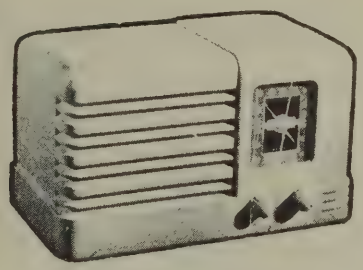
## Chassis No. RC-435 RC405C & D RC-436

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver



*Model 9TX-50*
*Light Mahogany Cabinet*
*Model 9TX-50M*
*Regular Mahogany Cabinet*





*Model 40X-30*
*Walnut Finish Plastic Cabinet*

*Model 40X-31*
*Ivory Finish Plastic Cabinet*

The following models comprise the 40X-50 Series RC-436 chassis.

| Model | Description |
|---|---|
| 40X-50 | "MODERN BLONDE" Blonde mahogany finish |
| 40X-51 | COLONIAL MODEL Maple finish |
| 40X-52 | IVORY MODEL Ivory finish |
| 40X-53 | "LA SIESTA" MODEL Mexican Scene |
| 40X-54 | TREASURE CHEST MODEL Weathered walnut finish |
| 40X-55 | HONEY MAPLE MODEL Honey maple finish |
| 40X-56 | WORLD'S FAIR MODEL New York World's Fair scene |
| 40X-57 | GOLDEN GATE MODEL San Francisco Exposition scene |

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-35L6GT or 50L6GT (see schematic) .... Power Output
(5) RCA-35Z5GT ..... Half-Wave Rectifier

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted ..... .6 watts
Maximum ..... 2.0 watts

LOUDSPEAKER

Type ..... 4-inch Electrodynamic

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that top edge of pointer just touches rivet in dial plate.

**Antenna.**—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

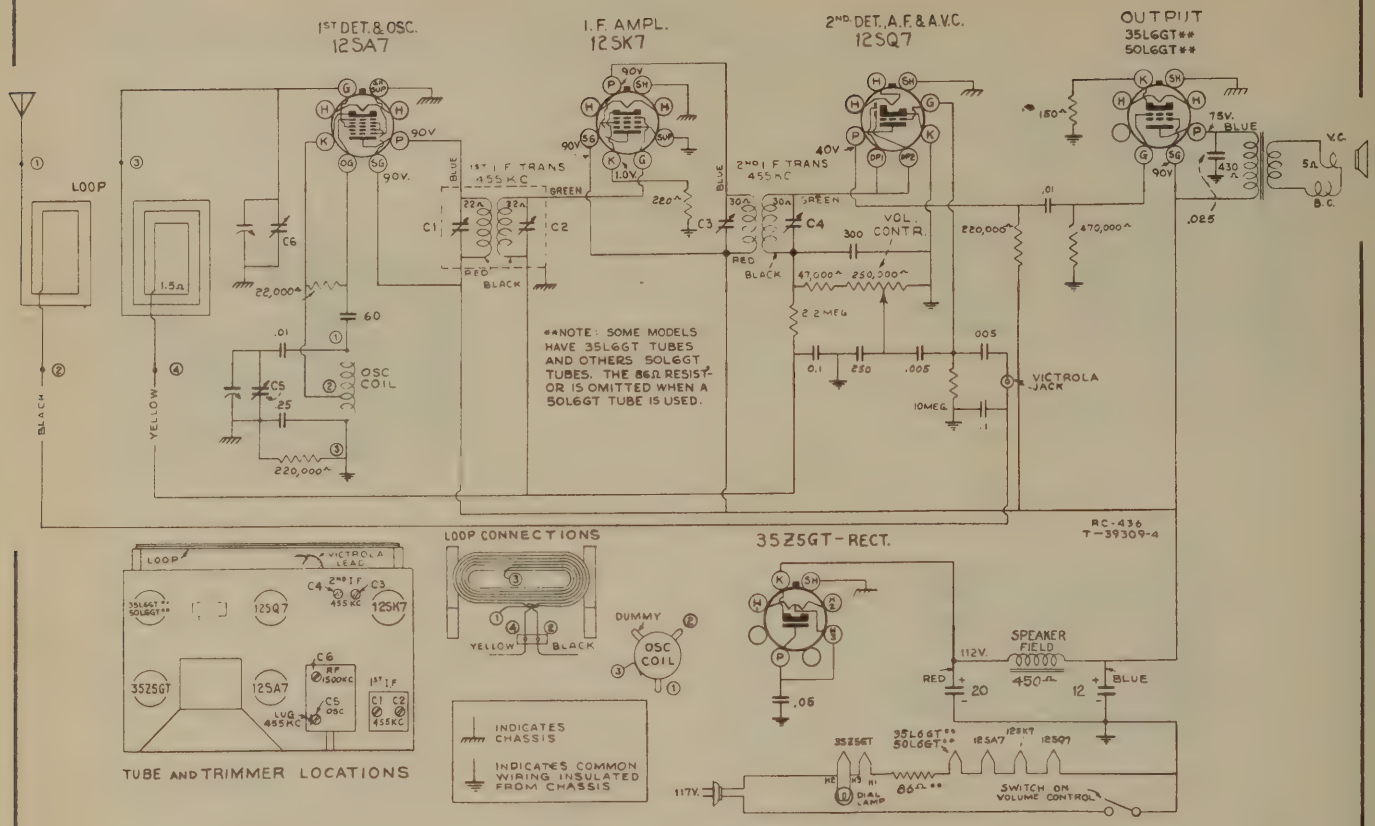
**Victrola Attachment.**—A jack is provided on the rear of cabinet for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | Tuning condenser stator (osc.) in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna term. of ant. loop in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C6 (antenna) |

### Precautionary Lead Dress

1. Dress 2nd I-F green lead close to chassis and under other parts.
2. Dress lead from gang condenser to grid of 12SA7 close to chassis and away from 12SQ7 socket.
3. Dress blue 1st I-F lead under volume control close to chassis.
4. Dress blue 2nd I-F lead close to chassis and behind 12SK7 socket.

# 9TX 50, 40X30, 40X31, 40X50 SERIES




*Schematic Circuit Diagram*

NOTE: Output cathode resistor is 120 ohm when 50L6GT tube is used.

## Replacement Parts MODELS 9TX-50, 9TX-50M

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC—435)** |
| 32968 | Capacitor—2 gang variable tuning |
| 13057 | Capacitor—60 mmfd. |
| 12488 | Capacitor—250 mmfd. |
| 12952 | Capacitor—300 mmfd. |
| 4838 | Capacitor—.005 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—.1 mfd. |
| 12484 | Capacitor—.25 mfd. |
| 32576 | Capacitor—Electrolytic 20-12 mfd. |
| 32962 | Coil—Oscillator coil |
| 32634 | Cord—Drive cord |
| 33662 | Drum—Drive cord and indicator drum |
| 33295 | Indicator—Dial pointer |
| 31480 | Lamp—Pilot Lamp |
| 33663 | Loop—Antenna loop |
| 33294 | Pulley—Drive cord pulley |
| 33558 | Resistor—86 ohms |
| 13428 | Resistor—150 ohms, ½ watt |
| 14561 | Resistor—220 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg. ½ watt |
| 13601 | Resistor—10 meg. ½ watt |
| 33293 | Shaft—Tuning knob shaft and bushing |
| 33557 | Socket—Dial Light |
| 32537 | Socket—Tube Socket |
| 31615 | Spring—Drive cord tension spring |
| 33296 | Spring—Drum retaining spring |
| 32966 | Transformer—I. F. Input |
| 32967 | Transformer—I. F. Output |
| 33291 | Volume Control |
| | **SPEAKER ASSEMBLIES** |
| | (Speaker No. 39105-2) |
| 34569 | Speaker—Complete—less transformer |
| 33741 | Transformer—Output |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33289 | Dial—Dial Scale |
| 33006 | Foot—Rubber foot for cabinet |
| 32571 | Knob—Tuning or volume control knob |
| 33742 | Socket—Phonograph input socket |

## Replacement Parts MODELS 40X-30, 40X-31

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 13057 | Capacitor—60 mmfd. |
| 12488 | Capacitor—250 mmfd. |
| 12952 | Capacitor—300 mmfd. |
| 4838 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—.25 mfd. |
| 32576 | Capacitor—Electrolytic, one section 20 mfd., one section 12 mfd. |
| 34259 | Coil—Oscillator coil |
| 32968 | Condenser—Variable tuning condenser |
| 32578 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 32946 | Drum—Variable condenser drive drum and indicator disc |
| 11765 | Lamp—Pilot lamp |
| 33807 | Loop—Antenna loop for 40X30 |
| 33808 | Loop—Antenna loop for 40X31 |
| 33558 | Resistor—Series resistor—86 ohms |
| 13428 | Resistor—150 ohms, ½ watt |
| 14561 | Resistor—220 ohms ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg. ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 32945 | Shaft—Tuning knob shaft and bearing |
| 33742 | Socket—Phonograph input socket |
| 33557 | Socket—Pilot lamp socket |
| 32537 | Socket—Tube socket |
| 30585 | Spring—Tuning condenser drive cord spring |
| 32966 | Transformer—First i-f transformer |
| 32967 | Transformer—Second i-f transformer |
| | **SPEAKER ASSEMBLIES 39105-2** |
| 32964 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32942 | Dial—Glass dial scale |
| 32447 | Knob—Ivory tuning, volume and power knob Model 40X31 |
| 32571 | Knob—Tan tuning, volume and power knob Model 40X30 |
| 32943 | Nut—Speed nut to fasten dial |

**Burnt-Out I-F Transformer:**

A few cases have been reported in Models 40X-30, -31 where the secondary of the 1st I-F transformer has burned out. Investigation showed that this was caused by a combination of two things:

(a) The low ends of the primary and secondary of the loop antenna were reversed, so that the low-end of the primary was connected to the AVC bus.

(b) A grounded antenna lead was connected to the antenna terminal on the back of the receiver.

This placed 110 volts on the grid of the I-F tube, drawing sufficient current to burn out the secondary of the 1st I-F transformer, and also the I-F bias resistor.

The remedy is to re-wire the loop antenna correctly as shown in the Service Data. The low-end of the primary should be connected through the .1 mfd. capacitor to chassis, and the low-end of the secondary should be connected to the AVC bus.

## MODELS 40X-30, 40X-31, 40X-50

**Additional Replacement Part:**

| Stock No. | |
|---|---|
| 11315 | Capacitor—.015 mfd. (output tube plate by-pass in some production of Model 40X-50) |
| 11765 | Lamp—Dial lamp |
| 34569 | Speaker—Complete—less transformer |

## Replacement Parts MODELS 40X-50

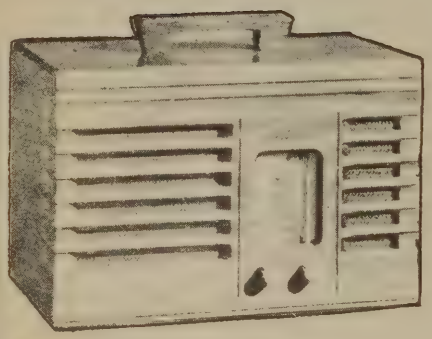
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-436)** |
| 33745 | Cable—Phono. cable |
| 13057 | Capacitor—60 mmfd. |
| 12488 | Capacitor—250 mmfd. |
| 12952 | Capacitor—300 mmfd. |
| 4838 | Capacitor—.005 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—.1 mfd. |
| 12484 | Capacitor—.25 mfd. |
| 32576 | Capacitor—Electrolytic, 20-12 mfd. |
| 32968 | Capacitor—Variable tuning |
| 32962 | Coil—Oscillator coil |
| 32634 | Cord—Drive cord |
| 33743 | Drum—Drive drum |
| 33663 | Loop—Complete antenna loop |
| 33558 | Resistor—86 ohms |
| 12071 | Resistor—120 ohms, ½ watt |
| 13428 | Resistor—150 ohms, ½ watt |
| 14561 | Resistor—220 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 33061 | Shaft—Drive shaft |
| 30585 | Spring—Drive cord spring |
| 33557 | Socket—Dial light socket |
| 32537 | Socket—Tube socket |
| 32966 | Transformer—I-F input transformer |
| 32967 | Transformer—I-F output transformer |
| 32545 | Volume control |
| | **SPEAKER ASSEMBLIES (39105-2)** |
| 32964 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33744 | Dial—Glass dial scale |
| 32895 | Knobs—Tuning and volume—Models 40X50, 40X51, 40X52, 40X55, 40X56, 40X57 (Walnut) |
| 32893 | Knobs—Tuning and volume—Model 40X53 (Red) |
| 32571 | Knobs—Tuning and volume—Model 40X54 (Tan) |
| 33742 | Socket—Phonograph input socket |

# MODELS 9TX-50, 9TX-50M, 2nd Production (Chassis No. RC-454)

# MODELS 40X-52, 40X-55, 2nd Production (Chassis No. RC-453)

## Five-Tube, Single-Band, AC-DC, Superheterodyne, Loop Receivers



*Model 9TX-50*

| Model | Description |
|---|---|
| 40X-52 | IVORY MODEL<br>Ivory Finish..... |
| 40X-55 | HONEY MAPLE MODEL<br>Honey maple finish.... |
| 9TX-50 | Light Mahogany Cabinet. |
| 9TX-50M | Regular Mahogany Cabinet ..... |

*Model 40X-55*

**Model 40X-52.**

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,650 kc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F and A.V.C.
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Half-Wave Rectifier

Dial Lamp (1) ..... Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS
A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted ..... .6 watts
Maximum ..... 2.0 watts

LOUDSPEAKER
Type ..... 5-inch Electrodynamic

### MODELS 9TX-50, 9TX-50M

**2nd Production, RC-454:**

**Add Stock No.**
35613 Back—Back cover and loop complete.

### MODELS 40X-52, 40X-55

**2nd Production, RC-453:**

**Add Stock No.**
35612 Back—Back cover and loop complete.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | CHASSIS ASSEMBLIES (RC-453, RC-454) | | 32545 | Control—Volume control and power switch (40X-52, 55) | |
| 34444 | Bracket—Dial and lamp support (9TX-50, 50M) | | 33291 | Control—Volume control and power switch (9TX-50, 50M) | |
| 34447 | Capacitor—Mica trimmer, 2.5 to 30 mmfd. (C1) | | 32634 | Cord—Tuning condenser drive cord | |
| 13057 | Capacitor—60 mmfd. (C5) | | 34567 | Drum—Variable tuning condenser drive drum (40X-52, 55) | |
| 4838 | Capacitor—.005 mfd. (C14, C15) | | 34446 | Eyelet—Used as pulley for drive cord (9TX-50, 50M) | |
| 4937 | Capacitor—.01 mfd. (C16) | | 11765 | Lamp—Dial lamp | |
| 11315 | Capacitor—.015 mfd. (C17) | | 34445 | Pointer—Dial pointer (9TX-50, 50M) | |
| 32787 | Capacitor—.05 mfd. (C18) | | 14439 | Resistor—100 ohms, ½ watt (R13) | |
| 4839 | Capacitor—0.1 mfd. (C12, C24) | | 13428 | Resistor—150 ohms, ½ watt (R9) | |
| 12484 | Capacitor—0.25 mfd. (C6) | | 13998 | Resistor—22,000 ohms, ½ watt (R1) | |
| 34597 | Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 12 mfd. (C19, C20) | | 12264 | Resistor—220,000 ohms, ½ watt (R2, R7) | |
| 34592 | Coil—Loop loading coil | | 12285 | Resistor—470,000 ohms, ½ watt (R8) | |
| 34443 | Coil—Oscillator coil | | 12679 | Resistor—2.2 megohm, ½ watt (R4) | |
| 34448 | Condenser—Variable tuning condenser (40X-52, 55) | | 13601 | Resistor—10 megohm, ½ watt (R6) | |
| 34440 | Condenser—Variable tuning condenser (9TX-50, 50M) | | 33061 | Shaft—Tuning condenser drive shaft (40X-52, 55) | |

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 34332 | Shaft—Tuning condenser drive shaft (9TX-50, 50M) |
| 34449 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Tuning condenser drive cord spring (40X52, 55) |
| 31615 | Spring—Drive cord spring (9TX-50, 50M) |
| 34441 | Transformer—1st I.F. transformer |
| 34442 | Transformer—2nd I.F. transformer |
| | **SPEAKER ASSEMBLIES (40X-52, 9TX-50 and 9TX-50M) (39223-1)** |
| 35065 | Cone—Cone complete with voice coil |
| 34450 | Speaker—5" dynamic speaker complete with cone and voice coil less output transformer |
| 34174 | Transformer—Output transformer |

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES 40X-55 (RL86-1)** |
| 32907 | Cap—Dust cap |
| 35066 | Cone—Cone complete with voice coil |
| 34450 | Speaker—5" dynamic speaker complete with cone and voice coil less output transformer |
| 35056 | Transformer—Output transformer |
| | **MISCELLANEOUS** |
| 33744 | Dial—Dial scale—glass (40X-52, 55) |
| 33289 | Dial—Dial scale (9TX-50, 50M) |
| 34016 | Knob—Walnut tuning or volume control knob (40X-52, 55) |
| 34015 | Knob—Tuning or volume control knob (9TX-50, 50M) |

## Alignment Procedure

Output **Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

| Steps | Connect the test oscillator to— | Tune test-osc. to— | Turn Radio Dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Tuning Condenser stator (ant.) in series with .1 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C7, C8, C9 (1st and 2nd I-F transformers) |
| 2 | Radiation Loop consisting of 2 turns of wire 18 in. in diameter located 4 to 6 feet from receiver | 1,650 kc | Full clockwise (out of mesh) | C4 (oscillator) |
| 3 | | 600 kc | Resonance on 600 kc signal | L1 (Loop inductance) |
| 4 | | 1,400 kc | Resonance on 1,400 kc signal | C2 (Antenna) |

**Precautionary Lead Dress:**

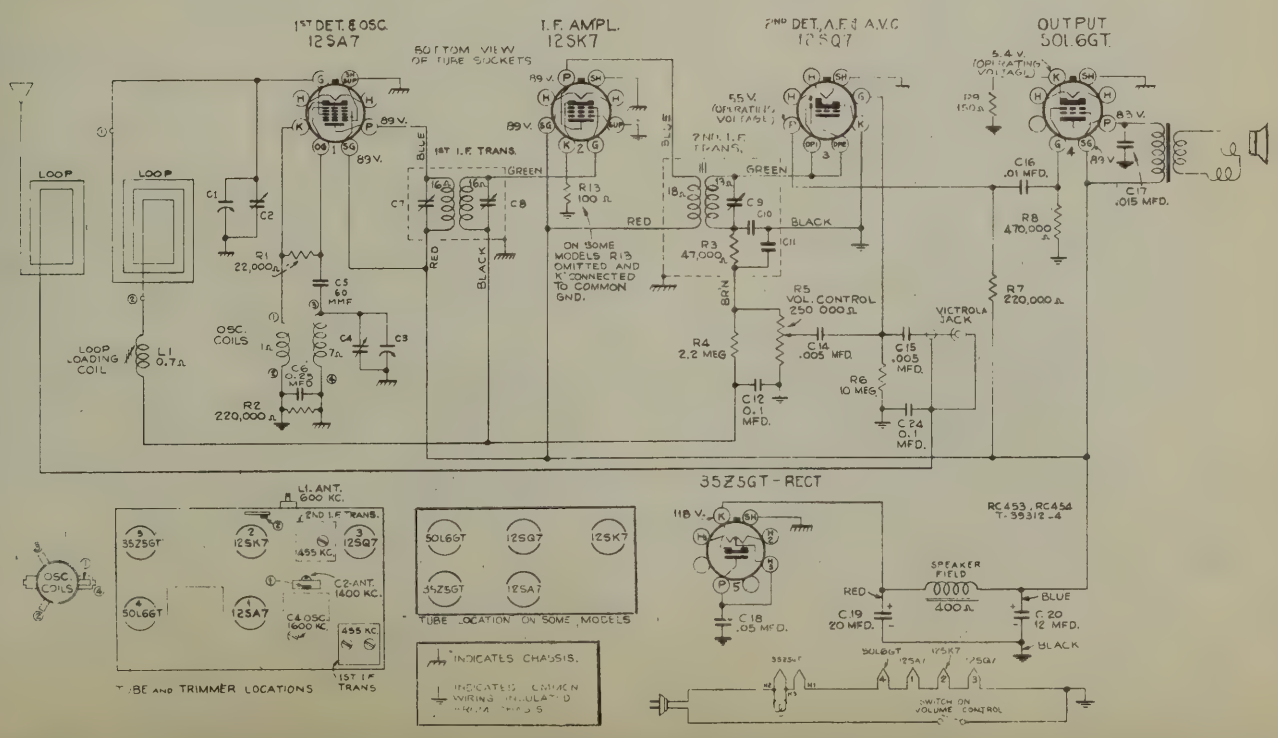
1. Green and blue leads from 1st I.F. transformer must be kept separated.

2. Dress yellow lead from loudspeaker under green lead from hum bucking coil to prevent it from touching the 50L6GT.

**Antenna.**—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

**Victrola Attachment.**—A jack is provided on the rear of cabinet for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. J1048 plug to fit the jack.



# MODEL 9X Series

## Chassis No. RC-350 & RC-350A

## Four-Tube, Single-Band, AC-DC, T-R-F Receiver

Model 9X Model 9X6, wood, walnut.
Model 9X1— Model 9X11, catalin, Brazilian onyx, green.
Model 9X2— Model 9X12, catalin, jet black.
Model 9X3— Model 9X13, catalin, Arizona onyx, cream.
Model 9X4— Model 9X14, catalin, burl onyx, brown.

## Electrical and Mechanical Specifications

Frequency Range ..... 540-1,760 kc
Alignment Frequency ..... 1,760 kc (ant., det.)

RCA Tube Complement

(1) RCA-6K7 ..... R-F Amp.
(2) RCA-6J7 ..... Detector
(3) RCA-25L6 ..... Output
(4) RCA-25Z6 ..... Rectifier

Dial Lamp ..... Mazda No. 40, 6.3 volts, .15 amps.

Power Supply Ratings

A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, 50 watts

Power Output (125-volt, 60-cycle supply)

Undistorted ..... 1.0 watt
Maximum ..... 1.5 watts

Loudspeaker

Type ..... 3-inch Electrodynamic
Voice-Coil Impedance ..... 3 ohms at 400 cycles

## Alignment Procedure

Reel up the antenna wire, and keep it away from chassis during alignment. Connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Pre-setting Dial.—With gang condenser rotor plates turned full in for maximum capacity, loosen dial-drum set-screw, and turn drum so that the top edge of dial (low-frequency end) is approximately 1/16-in. below level of gang frame, and tighten set-screw.

## MODELS 9X, 9X1, - 2, - 3, - 4

## (RC-350) Replacement Parts

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 30883 | Capacitor—300 mmfd. (C9) |
| 14393 | Capacitor—.01 mfd. (C1, C8, C10, C11) |
| 4870 | Capacitor—.025 mfd. (C7) |
| 30882 | Capacitor—.05 mfd. (C4) |
| 30965 | Capacitor—0.25 mfd. (C12) |
| 31323 | Capacitor—16 mfd. (C13, C14) |
| 31316 | Coil—Antenna coil (L1, L2) |
| 30876 | Coil—Detector coil (L3, L4) |
| 31321 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6) |
| 31320 | Cord—Resistance power cord (R7) |
| 31314 | Dial—Station selector dial scale |
| 31315 | Drum—Station selector dial scale drum—less scale |
| 4340 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead—approx. 25 ft. long |
| 13428 | Resistor—150 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) |
| 13730 | Resistor—1 Meg., ½ watt (R5) |
| 12679 | Resistor—2.2 Meg., ½ watt (R3) |
| 13601 | Resistor—10 Meg., ½ watt (R2) |
| 4387 | Screw—No. 6-32 headless set screw for drum Stock No. 31315 |
| 31318 | Socket—Dial lamp socket |
| 31319 | Socket—Radiotron socket |
| 31317 | Transformer—Output transformer (T1) |
| 31322 | Volume control and power switch (R1, S1) |
| | **SPEAKER ASSEMBLIES (86309-1)** |
| 31325 | Cone—Speaker cone and voice coil (L5) |
| 31324 | Speaker—Complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31326 | Escutcheon—Station selector dial escutcheon |
| 31204 | Knob—Station selector, or volume control knob |
| 30900 | Spring—Retaining spring for knob, Stock No. 31204 |
| 31915 | Escutcheon—Dial escutcheon (9X1, 9X2, 9X3, 9X4 only) |
| 31914 | Knob—Tuning or volume knob (9X2, 9X3 only) |
| 31204 | Knob—Tuning or volume knob (9X, 9X1, 9X4 only) |

## MODELS 9X6, - 11, - 12, - 13, - 14

## (RC-350A) Replacement Parts

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 14392 | Capacitor—4.7 mmfd. (C17) |
| 30883 | Capacitor—300 mmfd. (C9) |
| 14393 | Capacitor—.01 mfd. (C15) |
| 4870 | Capacitor—.025 mfd. (C7) |
| 30882 | Capacitor—.05 mfd. (C4) |
| 30899 | Capacitor—0.1 mfd. (C12) |
| 12484 | Capacitor—0.25 mfd. (C16) |
| 31323 | Capacitor—16 mfd. (C13, C14) |
| 30875 | Coil—Antenna coil (L1, L2) |
| 32027 | Coil—R-f coil (L3, L4) |
| 31321 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6) |
| 32030 | Cord—Resistance power cord (R7) |
| 31314 | Dial—Station selector dial scale |
| 31315 | Drum—Station selector dial scale drum—less scale |
| 4340 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead—approximately 25 ft. long. |
| 32028 | Resistor—25 ohms, 3 watts, wire wound (R8) |
| 13428 | Resistor—150 ohms, ½ watt (R6) |
| 13734 | Resistor—120,000 ohms, ½ watt (R9) |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) |
| 13730 | Resistor—1 meg., ½ watt (R5) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 13601 | Resistor—10 meg., ½ watt (R2) |
| 4387 | Screw—No. 6-32 headless set screw for drum, Stock No. 31315 |
| 31318 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 32029 | Transformer—Output transformer (T1) |
| 32026 | Volume control and power switch (R1, S1) |
| | **SPEAKER ASSEMBLIES (86309-2)** |
| 31325 | Cone—Speaker cone and voice coil (L5) |
| 32025 | Speaker complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31326 | Escutcheon—Station selector dial escutcheon—Model 9X6 |
| 31915 | Escutcheon—Station selector dial escutcheon—Models 9X11, 9X12, 9X13 and 9X14 only |
| 31914 | Knob—Station selector or volume control knob—Models 9X12 and 9X13 only |
| 31204 | Knob—Station selector or volume control knob—Models 9X6, 9X11 and 9X14 only |
| 30900 | Spring—Retaining spring for knobs |

## Precautionary Lead Dress

1. Dress detector grid lead close to top of speaker chassis.
2. Dress lead from grid of 6K7 to gang condenser away from detector section of gang, and clear of rotor plates.
3. Dress speaker leads close to, but not touching, cone.
4. Dress pilot lamp leads close to top of chassis, and clear of rotor.

## 25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.

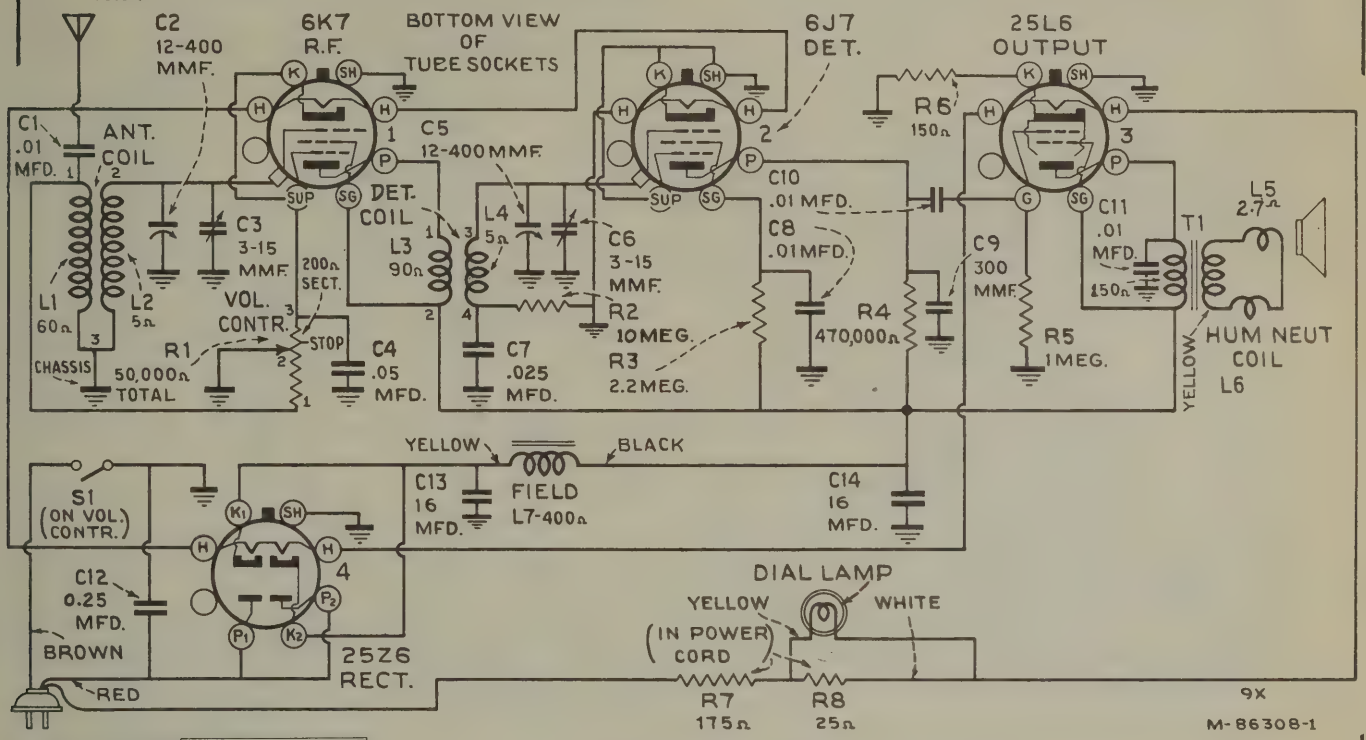



*Figure 2—Schematic Circuit Diagram* **9X, 9X1, - 2, - 3, - 4**

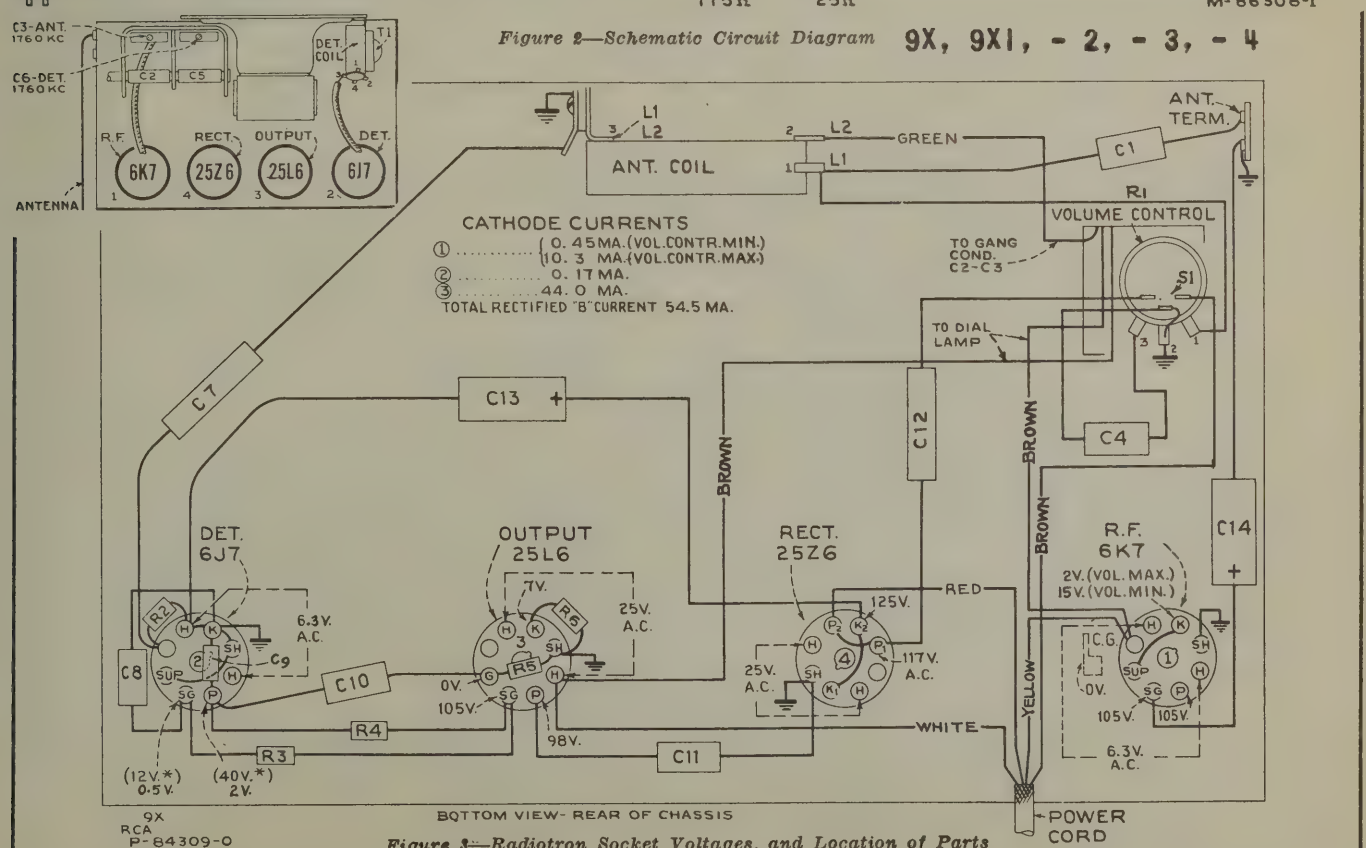



*Figure 3—Radiotron Socket Voltages, and Location of Parts*

*** Note:** Values with (*) are operating voltages.
Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.
Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

# 9X SERIES

## Precautionary Lead Dress

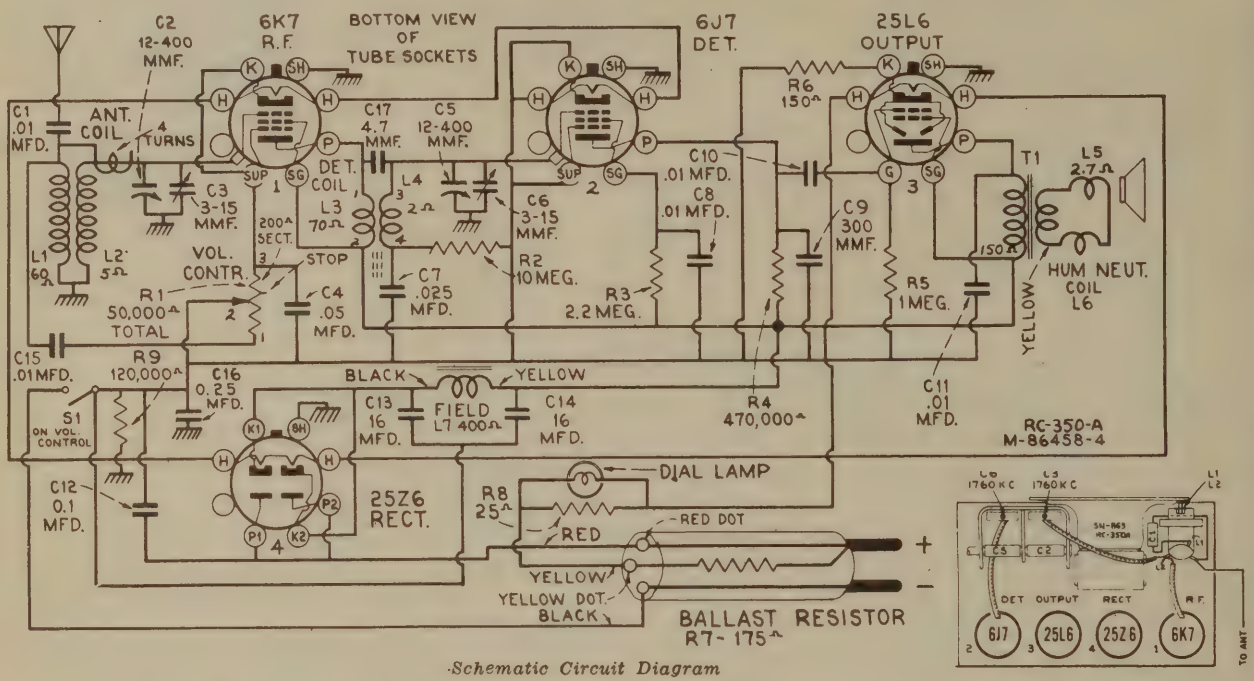
1. Dress green lead from antenna coil to gang up from speaker chassis.
2. Green lead from gang to grid of 6J7 must be dressed down and away from top of bracket, and centered in gang section.
3. Green lead from detector coil to gang must be dressed under pilot lamp bracket: Any excess wire should be pulled through to under side of chassis.
4. Pilot lamp leads must be dressed clear of gang rotor.
5. Magnetite core in detector coil must not be in contact with base or mounting screw.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

**Antenna.**—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmfd. capacitor in series with the lead-in.

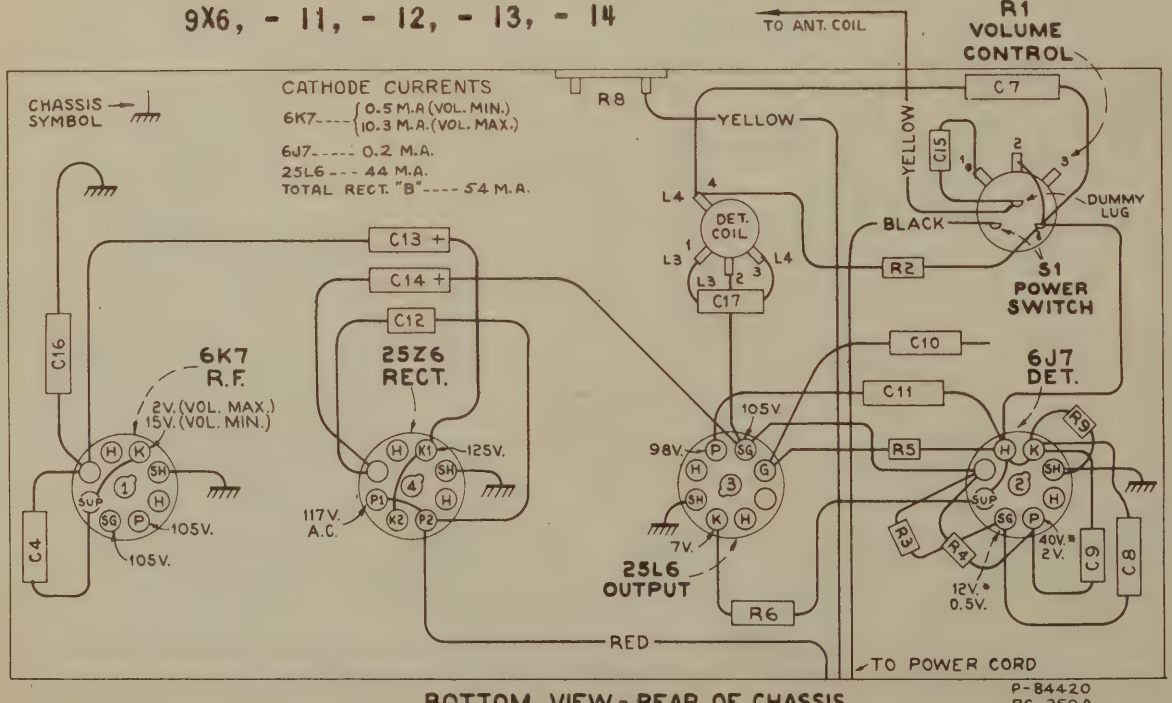
## 25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.




*Schematic Circuit Diagram*

## 9X6, - 11, - 12, - 13, - 14




**BOTTOM VIEW - REAR OF CHASSIS**

*R-F Wiring Diagram and Socket Voltages*

* Note: Values with (*) are operating voltages. Values not starred are actual measured voltages.

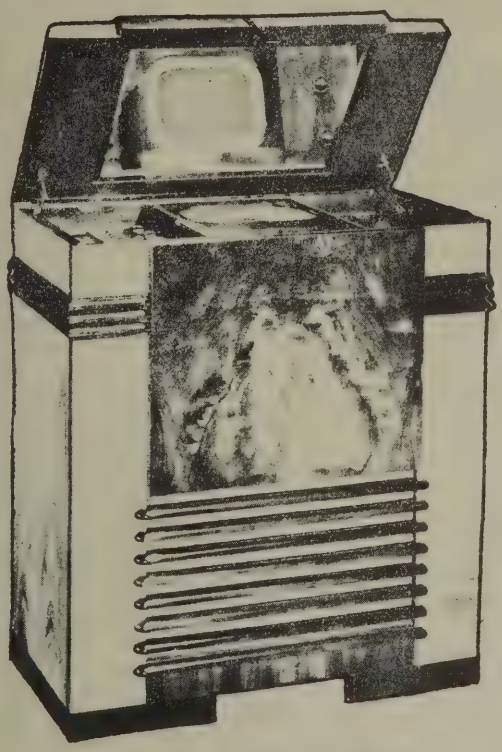
Measurements made to common negative line, unless otherwise specified.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

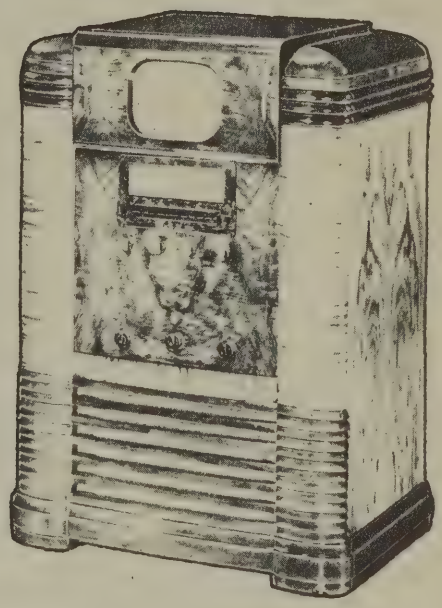
Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

# MODELS TRK-9, TRK-12, TRK-90 and TRK-120

## AC, Superheterodyne, High-Picture-Definition, Five-Television-Channel, Receiver and Three-Band, Electric Tuning, AC, Superheterodyne Broadcast Receiver



Models TRK-12, TRK-120



Models TRK-9, TRK-90

## General Specifications

| TRK-9, TRK-90 | | TRK-12, TRK-120 | |
|---|---|---|---|
| Height | 47½ in. | Height | 40⅝ in. |
| Width | 31½ in. | Width | 34⅝ in. |
| Depth | 24³⁄₁₆ in. | Depth | 19⅞ in. |
| Weight | 200 lb. | Weight | 198 lb. |
| Shipping Weight | 283 lb. | Shipping Weight | 275 lb. |

### Chassis Numbers and Power Supply Ratings

**Model TRK-12:**

Chassis KC-4, KK-7, RC-427, RS-83E, 105-125 volts, 60 cycles ..... 420 watts (total)
Chassis KC-4B, KK-7D, RC-427, RS-83E, 105-125 volts, 50-60 cycles .... 420 watts (total)

**Model TRK-120:**

Chassis KC-4F, KK-7F, RC-427F, RS-83E, 105-125 volts, 60 cycles ..... 420 watts (total)
Chassis KC-4J, KK-7J, RC-427F, RS-83E, 105-125 volts, 50-60 cycles .... 420 watts (total)

**Model TRK-9:**

Chassis KC-4A, KK-7A, RC-427A, RS-83E, 105-125 volts, 60 cycles ..... 420 watts (total)
Chassis KC-4C, KK-7E, RC-427A, RS-83E, 105-125 volts, 50-60 cycles .... 420 watts (total)

**Model TRK-90:**

Chassis KC-4H, KK-7H, RC-427G, RS-83E, 105-125 volts, 60 cycles ..... 420 watts (total)

## General Description

Models TRK-12 and TRK-120 are console-type, high-picture-definition, mirror-viewing, five channel, Television Receivers and three-band broadcast radio receivers enclosed in handsomely styled modern cabinets. Features of the Television receiver include: Twelve-inch Kinescope; Styrol (humidity-resisting) r-f and i-f transformer forms; black and white pictures; single station selector switch; temperature compensated condensers; iron core i-f and r-f tuning; double safety switch protection; safety-glass viewing shield; and extra large viewing mirror for wide angle viewing.

Models TRK-9 and TRK-90 are direct viewing, high-picture-definition, console-type, five channel, Television Receivers and three-band broadcast radio receivers in deluxe upright modern cabinets. Television features of these receivers are the same as for the TRK-12 and TRK-120, except that a nine-inch Kinescope is used.

# TELEVISION RECEIVER

## Electrical Specifications

**RCA TUBE COMPLEMENT**

In KC-4, KC-4B (TRK-12) and KC-4A, KC-4C (TRK-9) Video Chassis:

( 1) RCA-6AC7/1852 ..... 1st Det.
( 2) RCA-6J5 ..... Oscillator
( 3) RCA-6AB7/1853 ..... 1st Pix. I.F.
( 4) RCA-6AB7/1853 ..... 2nd Pix. I.F.
( 5) RCA-6AB7/1853 ..... 3rd Pix. I.F.
( 6) RCA-6AB7/1853 ..... 4th Pix. I.F.
( 7) RCA-6AC7/1852 ..... 5th Pix. I.F.
( 8) RCA-6H6 ..... Pix. 2nd Det.
( 9) RCA-6F8-G ..... AVC or Limiter
(10) RCA-6AC7/1852 ..... Video Amp.
(11) RCA-6H6 ..... D.C. Restorer
(12) RCA-12AP4/1803-P4 (TRK-12) or RCA-9AP4/1804-P4 (TRK-9) ..... Kinescope
(13) RCA-6SK7 ..... 1st Sound I.F.
(14) RCA-6AB7/1853 ..... 2nd Sound I.F.
(15) RCA-6H6 ..... Sound 2nd Det.-AVC
(16) RCA-6N7 ..... 1st Sync. Sep.-Amp.
(17) RCA-6Y6-G ..... 2nd Sync. Sep.
(18) RCA-6N7 ..... Sync. Amp.
(19) RCA-6N7 ..... Hor. Osc.-Discharge
(20) RCA-6L6 ..... Hor. Output
(21) RCA-5V4G (60 cycles) or RCA-25Z6 (50 cycles) ..... Hor. Damping
(22) RCA-6N7 ..... Vert. Osc.-Discharge
(23) RCA-6J5 ..... Vert. Output

In KK-7, KK-7D (TRK-12) and KK-7A, KK-7E (TRK-9) Television Socket Power Units:

(24) RCA-5T4 ..... Low Voltage Rectifier
(25) RCA-2V3-G ..... High Voltage Rectifier

In KC-4F, KC-4J (TRK-120) and KC-4H (TRK-90) Video Chassis:

( 1) RCA-6AC7/1852 ..... 1st Det.
( 2) RCA-6J5 ..... Oscillator
( 3) RCA-6AB7/1853 ..... 1st Pix. I.F.
( 4) RCA-6AB7/1853 ..... 2nd Pix. I.F.
( 5) RCA-6AB7/1853 ..... 3rd Pix. I.F.
( 6) RCA-6AB7/1853 ..... 4th Pix. I.F.
( 7) RCA-6AC7/1852 ..... 5th Pix. I.F.
( 8) RCA-6H6 ..... Pix. 2nd Det.
( 9) RCA-6SQ7 ..... Limiter
(10) RCA-6AC7/1852 ..... Video Amp.
(11) RCA-12AP4/1803-P4 (TRK-120) or RCA-9AP4/1804-P4 (TRK-90) ..... Kinescope
(12) RCA-6SK7 ..... 1st Sound I.F.
(13) RCA-6AB7/1853 ..... 2nd Sound I.F.
(14) RCA-6H6 ..... Sound 2nd Det.-AVC
(15) RCA-6N7 ..... 1st Sync. Sep.-Amp.
(16) RCA-6Y6-G ..... 2nd Sync. Sep.
(17) RCA-6N7 ..... Sync. Amp.
(18) RCA-6N7 ..... Hor. Osc.-Discharge
(19) RCA-6L6 ..... Hor. Output
(20) RCA-5V4-G (60 cycles) or RCA-25Z6 (50 cycles) ..... Hor. Damping
(21) RCA-6N7 ..... Vert. Osc.-Discharge
(22) RCA-6J5 ..... Vert. Output

Note: An RCA-6H6 D.C. Restorer is added in some TRK-120, TRK-90.

In KK-7F, KK-7J (TRK-120) and KK-7H (TRK-90) Television Socket Power Units:

(23) RCA-5U4G (60 cycles, without D.C. Restorer), RCA-5T4 (60 cycles, with D.C. Restorer), or RCA-5T4 (50 cycles) ..... Low Voltage Rectifier
(24) RCA-2V3-G ..... High Voltage Rectifier

**TELEVISION CHANNELS** (Selector Switch Positions)

1 ..... 50 to 56 mc.
2 ..... 60 to 66 mc.
3 ..... 66 to 72 mc.
4 ..... 78 to 84 mc.
5 ..... 84 to 90 mc.

**PICTURE SIZE** (Approximate Mask Dimensions)

TRK-9, TRK-90 ..... 5½ x 7¼ in.
TRK-12, TRK-120 ..... 7⅜ x 9¾ in.

Overall Video Band Width ..... 4 mc.
Scanning ..... Interlaced, 525 line
Horizontal (Line) Scanning Frequency (Sawtooth Wave) ..... 15,750 cps
Vertical (Field) Scanning Frequency (Sawtooth Wave) ..... 60 cps
Frame Frequency (Picture Repetition Rate) ..... 30 cps

NOTE: *This service note includes all changes that have been incorporated since initial production, including deletion of the 44–50 m.c. channel and addition of the 60–66 m.c. channel.*

## IMPORTANT PRECAUTIONS

A good ground should be connected to the receiver at all times.

Always wear gloves and shatter-proof goggles when handling Kinescope tubes.

Do not eliminate the protection afforded by the interlock switches.

ALWAYS replace the shield can over the 2V3-G high voltage rectifier. The most dangerous portion of the H.V. supply is the plate lead of the 2V3-G tube.

Do not measure any voltages on the video chassis unless the primary leads of the high voltage transformer have been unsoldered from the supply line, and taped.

Use only one hand when working on the video or high voltage SPU chassis, and always connect a shorting lead to ground (first), then to the high side of both high voltage filter capacitors.

Make no voltage measurements on the high voltage (7,300 volts) SPU chassis.

Work on a television receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.

# Precautions in Handling Kinescopes

The Kinescope bulb encloses a high vacuum and, due to its large surface area, is subjected to considerable air pressure. For these reasons, Kinescopes must be handled with more care than ordinary receiving tubes.

The large end of the Kinescope bulb — particularly that part at the rim of the viewing surface—must not be struck, scratched or subjected to more than moderate pressure at any time. If the tube sticks, or fails to slip into its socket or deflecting yoke smoothly, investigate and remove the cause of trouble. Do not force the tube.

All RCA Kinescopes are shipped in special cartons and should always be left in the cartons until ready for installation in the receiver. Keep the carton for future use.

The RCA-12AP4/1803-P4 (12-inch) Kinescope is equipped with a protective lid and shield. Do not at any time remove the close-fitting cone-shaped section of the protective shield from the Kinescope. This section should be installed with the tube in the cabinet and is designed to protect the user while handling the glass bulb.

**CAUTION: Do not open the shipping carton, install, remove, or handle the Kinescope in any manner, unless shatterproof goggles and heavy gloves are worn. People not so equipped should be kept away while handling Kinescopes. Keep Kinescope away from the body while handling.**

# Operation

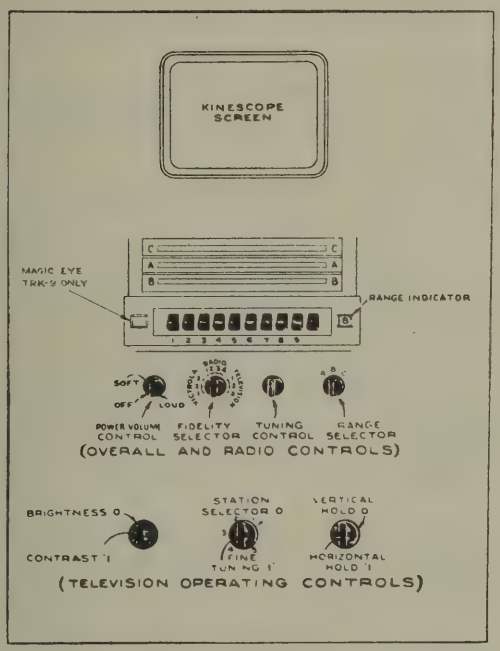



*Figure 1—Operating Controls, TRK-9, TRK-90*

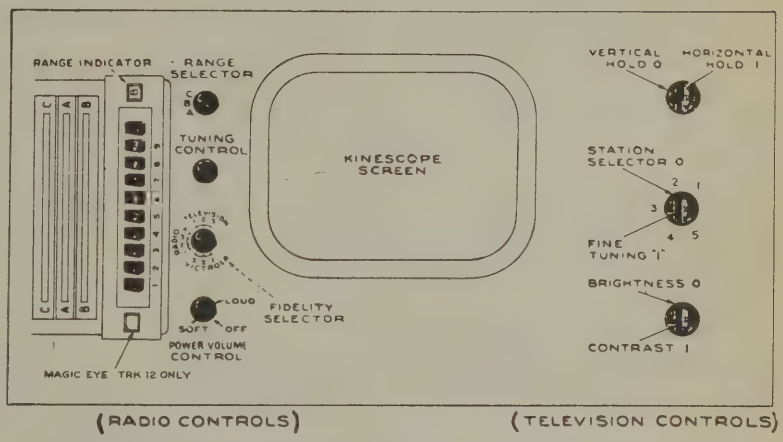



*Figure 2—Operating Controls, TRK-12, TRK-120*

The "Power-Volume" control on the radio receiver turns on the power for the complete receiver. The "Victrola, Radio, Television" control selects the type of operation desired. There are three Victrola fidelity positions, four radio fidelity positions and three Television sound fidelity positions on this switch. The furthermost clockwise position being the highest fidelity position for Television sound.

**Television Operation:**

**Station Selector and Fine Tuning.**—The outer ring **"O"** section of the central dual control knob on the Television panel selects the station from which it is desired to receive Television transmissions.

Five Television channels are covered as follows:

(1) 50 to 56 mc.
(2) 60 to 66 mc.
(3) 66 to 72 mc.
(4) 78 to 84 mc.
(5) 84 to 90 mc.

Set the station selector to the number corresponding to the frequency of the station from which it is desired to receive Television broadcasts.

The inner section **"I"** of this knob is used for fine tuning and may eliminate moving ripples or distortion if due to interfering radio signals.

Before the Television portion of the receiver is turned "ON" it is advisable to turn the Brightness and Contrast controls completely counter-clockwise to reduce the illumination of the spot which appears on the Kinescope before the sweep circuits have started functioning.

**Contrast and Brightness Controls.**—The inner **"I"** section of the "Contrast"-"Brightness" controls is the "Contrast" control and varies the black and white tones of the picture being received. Too much contrast gives blurred details and a lack of half-tones, while too little contrast makes it all half-tones or grays. Turning clockwise increases contrast from grays, to black and white. See Operating Instructions for this receiver.

The outer ring **"O"** is the Brightness Control and affects the average illumination of the picture. Turning clockwise increases the brightness. See Operating Instructions for this receiver.

An approximate adjustment for proper contrast is to turn the "Contrast" control fully counter-clockwise, then turn the "Brightness" control until the screen is slightly illuminated. Then reduce the Brightness control just sufficient to make the screen dark, then bring up the Contrast Control until the picture appears. A slight further adjustment of the Brightness or Contrast control may be necessary in some cases. A slight readjustment of the contrast control may aid synchronization of the picture.

**Hold Controls.**—The dual knobs on the Television panel marked "Horizontal" and "Vertical" Hold, control the picture stability. The inner section designated by a **"I"** is the Horizontal Hold Control and when being set should be turned slowly to the point at which the picture "locks in" horizontally. See Operating Instructions for this receiver.

The outer ring section designated by **"O"** is the Vertical Hold Control and when being set should be turned to the point where the picture "locks in" vertically.

These two controls on this dual knob should not ordinarily require readjustment after good picture reception has once been obtained. An occasional resetting may be necessary due to changing to a different station, and to the gradual aging of the tubes.

# SERVICE DATA

**Kinescope Installation (TRK-9, TRK-90).**

1. Remove back cover of cabinet.

2. Remove the two screws which secure the wooden block, on which the yoke is mounted, to the upper shelf, and drop this block and yoke away from the shelf.

3. Loosen the thumb screw in the center of the slotted block of wood on the top shelf, pull this block of wood towards the rear of the cabinet and turn it so that the "V" slot on the front end of the block is to your right.

4. Wearing gloves and goggles, carefully slide the Kinescope on the "V" in the block, and turn both the block and the Kinescope so that the Kinescope faces the viewing window. Slide the Kinescope up to the mask in the window and fasten loosely in place by sliding the "V" block up to the bottom of the Kinescope face, and fastening it with the thumb screw.

5. Place the yoke and the wooden block on which it is mounted, on the Kinescope neck, rotate the block 90° from its original mounting position in order to have it clear the top of the cabinet and slide it into position on the Kinescope neck. DO NOT FORCE YOKE. In some cases where the yoke lead is too short it may be necessary to loosen the "V" block and swing the Kinescope neck to the left in order to be able to place the yoke on the Kinescope neck without forcing.

6. Fit the upper part of the wooden yoke mounting block into the slot on the underside of the cabinet top and fasten the lower end of the block securely by means of the two screws. The Kinescope should be mounted loosely in place, so that the yoke is not forced on the Kinescope neck at any time.

7. Loosen the wing nuts on the yoke mounting bracket, and move the yoke forward on the neck of the Kinescope so that it pushes the Kinescope against the mask. Tighten the wing nuts to hold the Kinescope and yoke securely in this position.

8. It may be necessary to rotate the Kinescope, within the limits allowed by the high voltage second anode lead, with respect to the mask in order to obtain proper masking of the edges on the Kinescope screen. Before rotating the Kinescope, the screws holding the yoke mounting block should be loosened, so that the Kinescope neck will not be forced.

9. Move the "V" block forward so that it holds the bottom of the Kinescope in place. Tighten the thumb screw.

10. Place the second anode lead on the second anode cap at the side of the Kinescope.

11. After the receiver is operating, and if the picture is not squared with the mask, using a screw driver loosen the clamping screws on the band around the yoke and rotate the yoke until the picture is squared with the mask, then tighten these clamping screws securely.

**CAUTION:** When removing the back cover of the cabinet, after the screws have been removed do not allow the cover to slide down on the neck of the Kinescope, or the neck of the Kinescope may be snapped off.

**Kinescope Installation (TRK-12, TRK-120).**—Refer to figure 4.

1. Remove back cabinet cover.

2. Remove the top safety glass cover by removing the three wing nuts "E" at the two front corners and right rear corner of the cover and loosening the wing nut "E" at the left rear corner of the cover.

3. Lift the cover straight upwards, taking care not to scratch the cabinet finish with the protruding screws or the cover itself.

4. Loosen the two wing nuts "F" on the yoke holding frame, and allow the yoke to drop down as far as possible.

5. Using gloves and goggles, open the Kinescope shipping carton and remove the top cover on the Kinescope.

6. Remove the Kinescope from the shipping carton (do not remove the close fitting cardboard shield from the Kinescope), and insert the Kinescope into the cabinet, guiding the neck of the Kinescope into the yoke. Do not force the neck of the Kinescope into the yoke, or the tube may break. Let the Kinescope down slowly so that it finally rests on the yoke.

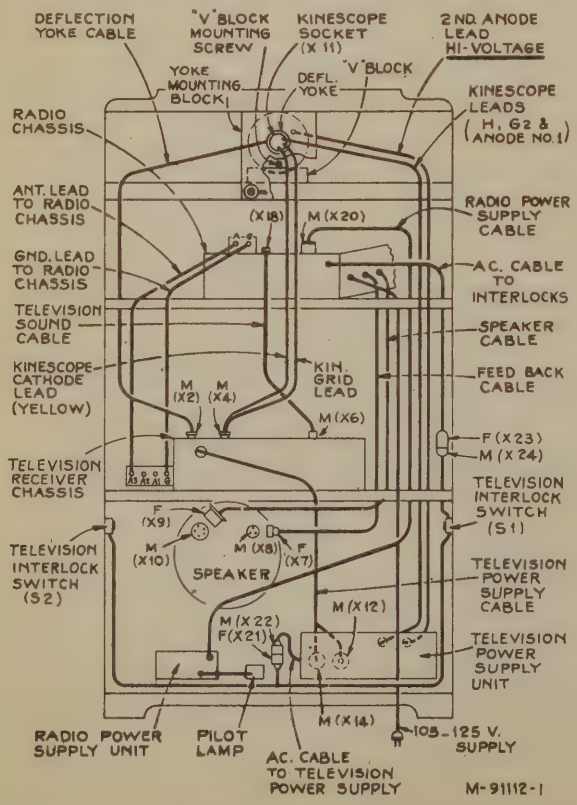



*Figure 3A—Cabinet Wiring—Model TRK-9, TRK-90*

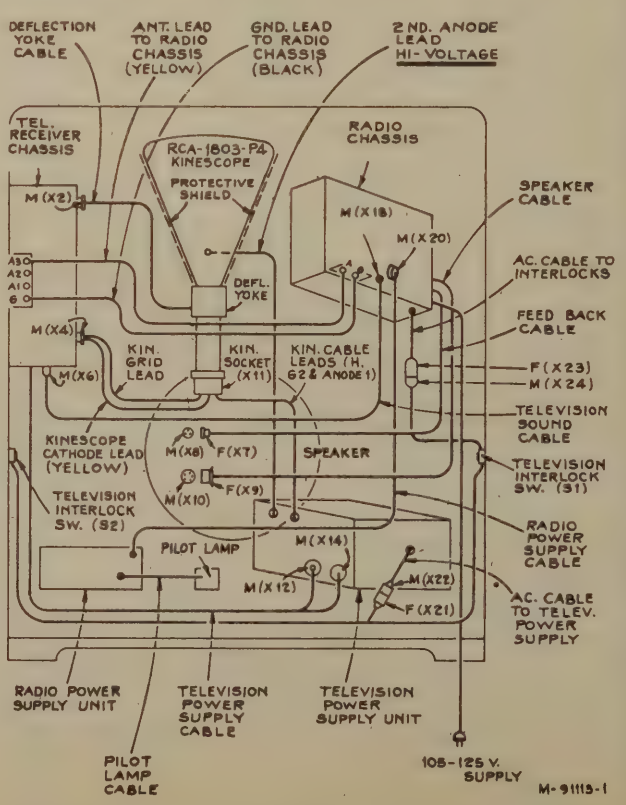



*Figure 3B—Cabinet Wiring—Model TRK-12, TRK-120*

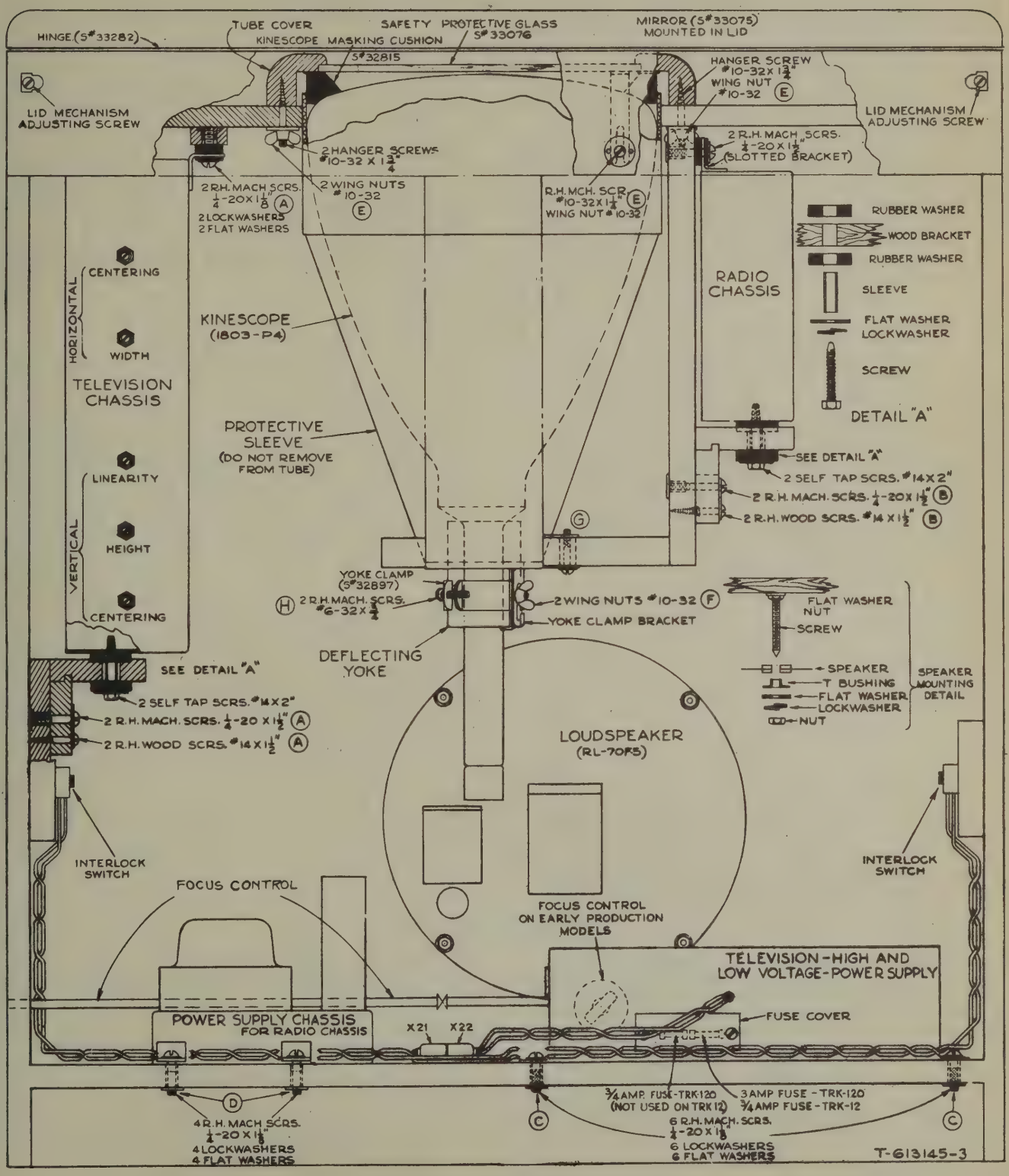



*Figure 4—TRK-12, TRK-120-Assembly*

7. Rotate the Kinescope and cardboard container (but not the yoke), so that the second anode cap at the side of the tube is towards the front of the cabinet.

8. Place the white rubber mask on the face of the Kinescope, with the ribs on the mask facing upwards toward the mirror. Line up the mask so that it masks the edges on the Kinescope face. Then, if necessary, lift the Kinescope and rotate it so the mask is approximately squared up with the cover opening. The second anode cap should be kept towards the front of the cabinet.

9. Replace the safety glass cover and wing nuts. Tighten wing nuts to hold the cover securely.

10. Loosen the wing nuts "F" on the yoke mounting bracket and push the two metal brackets, on which the bottom of the yoke rests, upward, until the rubber mask rests against the top cover. If the mask and the cover opening do not line up, rotate the cone-shaped Kinescope shield until they do. Tighten the wing nuts to hold the yoke and tube in this position. In some cases it may be necessary to loosen the four screws holding the yoke support to the wooden frame and shift the yoke support to make the mask and Kinescope line up symmetrically with the cover opening.

11. Place the second anode lead on the second anode cap at the side of the Kinescope.

12. After the receiver is operating, and if the picture is not squared up with the cover opening, the two screws "H" on the band around the yoke should be loosened, and the yoke rotated to square up the picture, then these screws should be tightened with a screw driver.

**Focusing Control.**—This is a screw driver adjustment located on the right side of the cabinet near the base. On early production receivers, a knob located at the bottom, rear of the cabinet is the focus control.

**Adjustments.**—There are a series of screw driver slot adjustments at the rear of the TRK-12 and TRK-120 (at the side of the TRK-9 and TRK-90), used to obtain the proper picture size, centering, and vertical distribution. These adjustments are explained fully in the receiver operating instructions, and also in the booklet: "Practical Television by RCA."

When the receiver is moved from one location to another some readjustment of these controls may be necessary.

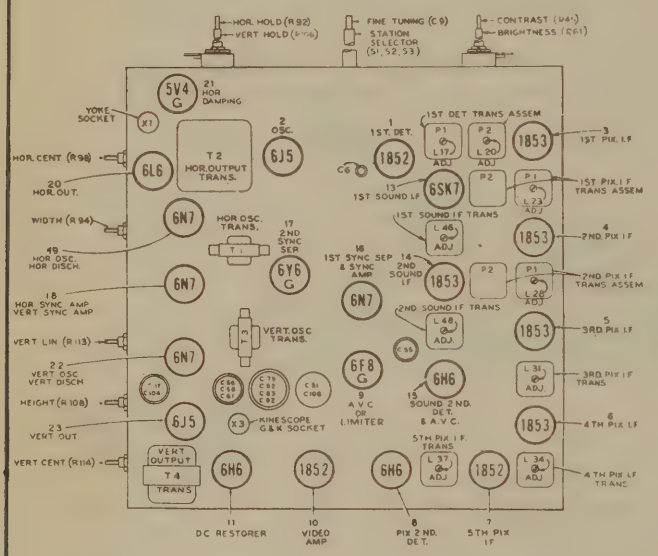



*Figure 5A—Top View TRK-9, TRK-12 Video Chassis*

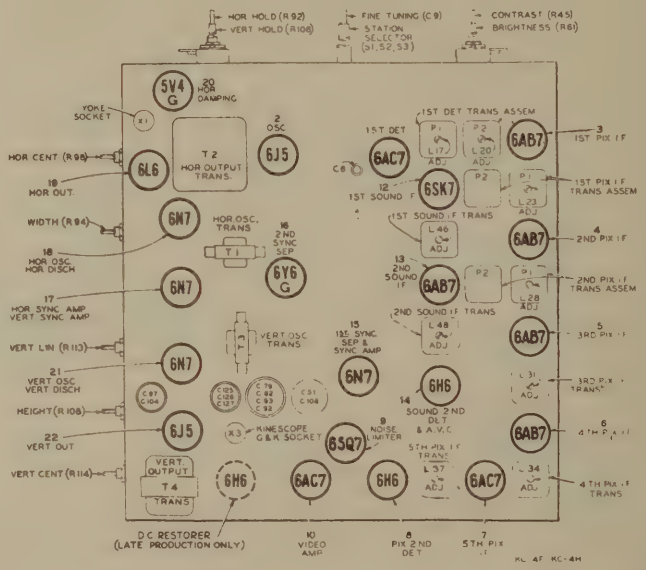



*Figure 5B—Top View TRK-90, TRK-120 Video Chassis*

# Video Chassis

When it is desired to measure any voltages on this chassis, the primary leads of the high voltage transformer T6 (T9—50 cycle models) should be disconnected and taped together.

When any changes have to be made in the Video chassis, the lead and part locations should be replaced as closely as possible to the original positions.

Because of the special equipment and procedure necessary for the proper alignment of these receivers, the alignment will not be covered in this service note.

Refer to the booklet: **Practical Television by RCA,** for detailed explanations of circuit operation in a Television receiver.

**Service Hints:**

1. Poor Horizontal Distribution of the picture elements may be due to a 6L6 tube. RCA-6L6 tubes of known recent manufacture are the only tubes recommended for the Horizontal sweep output circuit. By careful scrutiny, these tubes can be identified by the three "rings" or sections welded together at the base ring of the tube, as shown in Figure 6. If any other 6L6 tube is used in this position it will break down in a very short time.

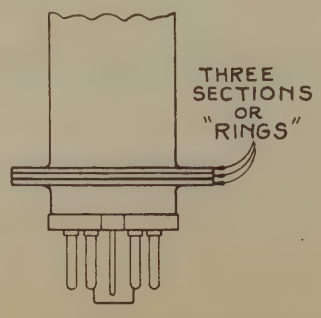



*Figure 6—Recommended Type 6L6 Identification*

2. If the picture "tears out" when the receiver is jarred it may be due to microphonic 6AB7/1853, 6AC7/1852 or 6J5 tubes.

3. The 6J5 oscillator tube should be removed without rocking it in its socket to loosen it, as the rocking motion may cause the 80.5 mmf capacitor to break off.

4. The coils in oscillator circuit should not be touched or moved or the alignment of the receiver will be disturbed.

5. The insulator on the filter capacitors may become dirty and break down to short out the high voltage.

6. The Video coupling capacitors C50, 53, 59 should be kept clear of chassis.

7. A gassy 2V3-G tube may cause resistor R-137 to burn. Replace 2V3-G tube, and resistor, if necessary.

8. Changing the position of the oscillator shield plate will disturb the alignment.

## Television Socket Power Units

**The following precautions should be observed when any work is being done on the SPU:**

1. Remove power supply cord from the power supply socket.

2. No attempt should ever be made to measure the high (7,500 volts) voltage because of the difficulties and dangers involved. Servicing should be done with an ohm meter.

3. If, at any time it becames necessary to service the SPU, the suspected parts should be replaced by parts known to be in good operating condition.

4. Use only one hand at a time. It is advisable to keep the other hand in one's pocket.

5. Connect a shorting lead between ground (first) and the high voltage side of C-113 and C-114 (C-121 and C-122 in 50 cycle models).

6. Whenever working with the oil-filled capacitors, keep a constant short across the capacitor, as these capacitors do not completely lose their charge after being discharged a single or several subsequent times.

7. Only one person at a time should work on the unit to prevent any misunderstanding which may result in an accident.

## Antenna Installation

The finest television receiver built may be said to be only as good as the antenna design and installation. It is therefore important to use a correctly designed antenna, and use care in its installation.

In most cases, the antenna should not be installed permanently on the apartment or residence roof until the quality of the picture reception has been observed on a Television receiver. A temporary transmission line can be run between receiver and the antenna allowing sufficient slack to permit moving the antenna. Then, with a telephone system connecting an observer at the receiver and an assistant on the roof to find an antenna location, the antenna can be positioned to give the most satisfactory results on the received signal. A shift of only a few feet in antenna position or direction may effect a tremendous difference in picture reception.

Whenever possible, the antenna location should be chosen or erected so the antenna is not only broadside to the transmitter but removed as far as possible from highways, hospitals and doctors' offices and similar sources of interference. Auto ignition and diathermy apparatus may cause noise interference spoiling the picture.

In mounting any antenna, care must be taken to keep the antenna rods or pickup wires proper at least 1/4 wave length (at least 6 feet) away from other antennas, metal roofs and gutters or metal objects. Under certain extremely unusual conditions, it may be possible to rotate or position the antenna so it receives the cleanest picture over a reflected path. If such is the case, the antenna should be so positioned. However, such a position may give variable results as the nature of reflecting surfaces may vary with weather conditions, as a wet surface has been known to have different reflecting characteristics than a dry surface.

In short, a television receiving antenna and its installation must conform to much higher standards than an antenna for reception of International Short Wave and Standard Broadcast signals because:

(1) Intervening obstacles have a pronounced shielding effect on the ultra-high frequency waves producing low intensity signals. Severe trouble with multi-path transmissions may be experienced, especially in congested city areas.

(2) The picture signal is comprised of a very wide band or range of frequencies, all of which must be received with good efficiency.

(3) It must be continually remembered that the discernment for the eye is much more critical than that of the ear.

For further information on antennas and antenna installation see RCA Booklet entitled: **"Practical Television by RCA,"** and also the specific instructions accompanying the RCA Television Antenna.

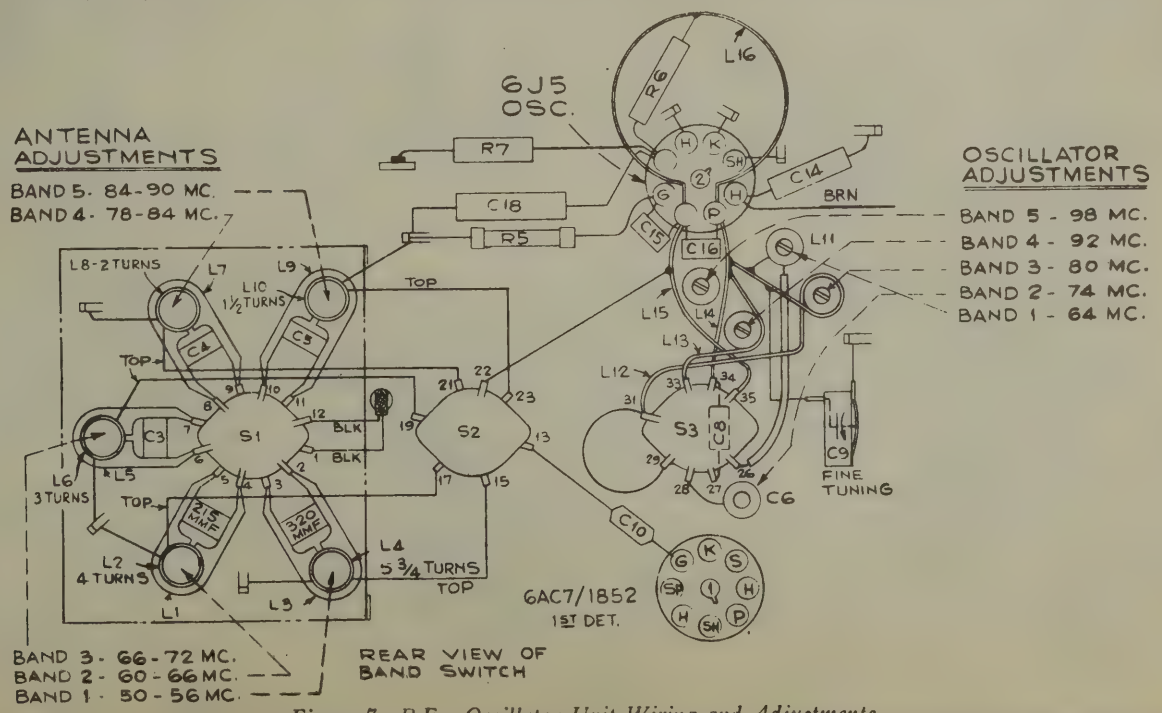



*Figure 7—R.F.—Oscillator Unit Wiring and Adjustments*

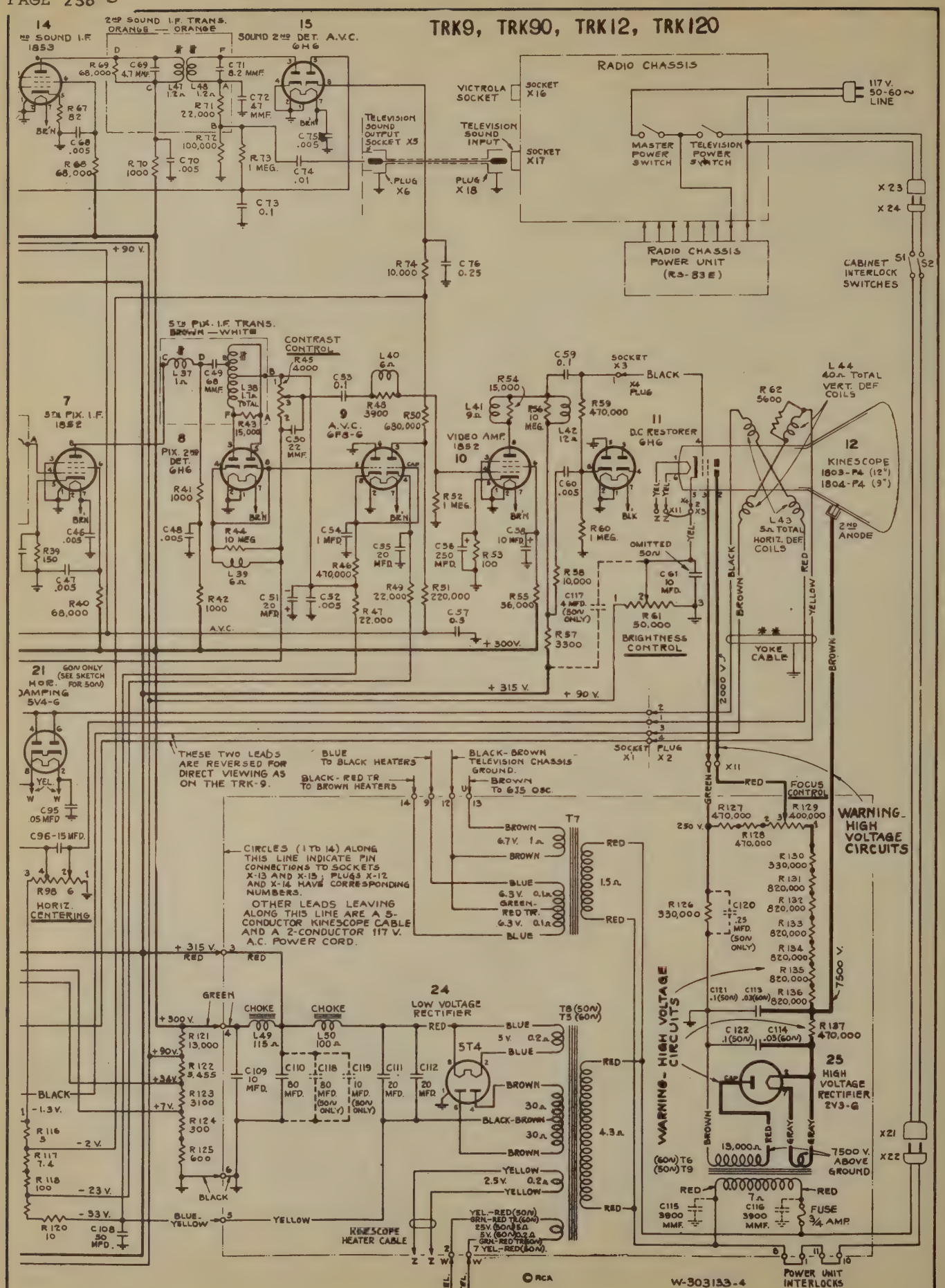

TRK9, TRK90, TRK12, TRK120
RADIO CHASSIS
RADIO CHASSIS POWER UNIT (RS-83E)
CABINET INTERLOCK SWITCHES
MASTER POWER SWITCH
TELEVISION POWER SWITCH
117 V. 50-60 ~ LINE
VICTROLA SOCKET
TELEVISION SOUND INPUT
TELEVISION SOUND OUTPUT SOCKET X5
14 2ND SOUND I.F. 1853
2ND SOUND I.F. TRANS. ORANGE — ORANGE
15 SOUND 2ND DET. A.V.C. 6H6
7 5TH PIX. I.F. 1852
5TH PIX. I.F. TRANS. BROWN — WHITE
8 PIX. 2ND DET. 6H6
9 A.V.C. 6F8-G
10 VIDEO AMP. 1852
11 D.C. RESTORER 6H6
12 KINESCOPE 1803-P4 (12") 1804-P4 (9")
2ND ANODE
L44 40Ω TOTAL VERT. DEF. COILS
L43 5Ω TOTAL HORIZ. DEF. COILS
CONTRAST CONTROL
BRIGHTNESS CONTROL
YOKE CABLE
21 HOR. DAMPING 5V4-G
24 LOW VOLTAGE RECTIFIER
25 HIGH VOLTAGE RECTIFIER 2V3-G
5T4
T7
T8 (50N) T5 (60N)
T6 (60N) T9
WARNING - HIGH VOLTAGE CIRCUITS
FOCUS CONTROL
HORIZ. CENTERING
CHOKE
CHOKE
+315 V.
+300 V.
+90 V.
+34 V.
+7 V.
-1.3 V.
-2 V.
-23 V.
-33 V.
7500 V. ABOVE GROUND
FUSE 3/4 AMP.
KINESCOPE HEATER CABLE
POWER UNIT INTERLOCKS
THESE TWO LEADS ARE REVERSED FOR DIRECT VIEWING AS ON THE TRK-9.
BLUE TO BLACK HEATERS
BLACK-RED TR TO BROWN HEATERS
BLACK-BROWN TELEVISION CHASSIS GROUND.
BROWN TO 635 OSC.
CIRCLES (1 TO 14) ALONG THIS LINE INDICATE PIN CONNECTIONS TO SOCKETS X-13 AND X-15; PLUGS X-12 AND X-14 HAVE CORRESPONDING NUMBERS.
OTHER LEADS LEAVING ALONG THIS LINE ARE A 5-CONDUCTOR KINESCOPE CABLE AND A 2-CONDUCTOR 117 V. A.C. POWER CORD.
OMITTED 50N
W-303133-4
RCA

*Figure 8—Partial Schematic Diagram TRK-9 and TRK-12* **With Picture** *AVC. Otherwise same as Figure 9.*

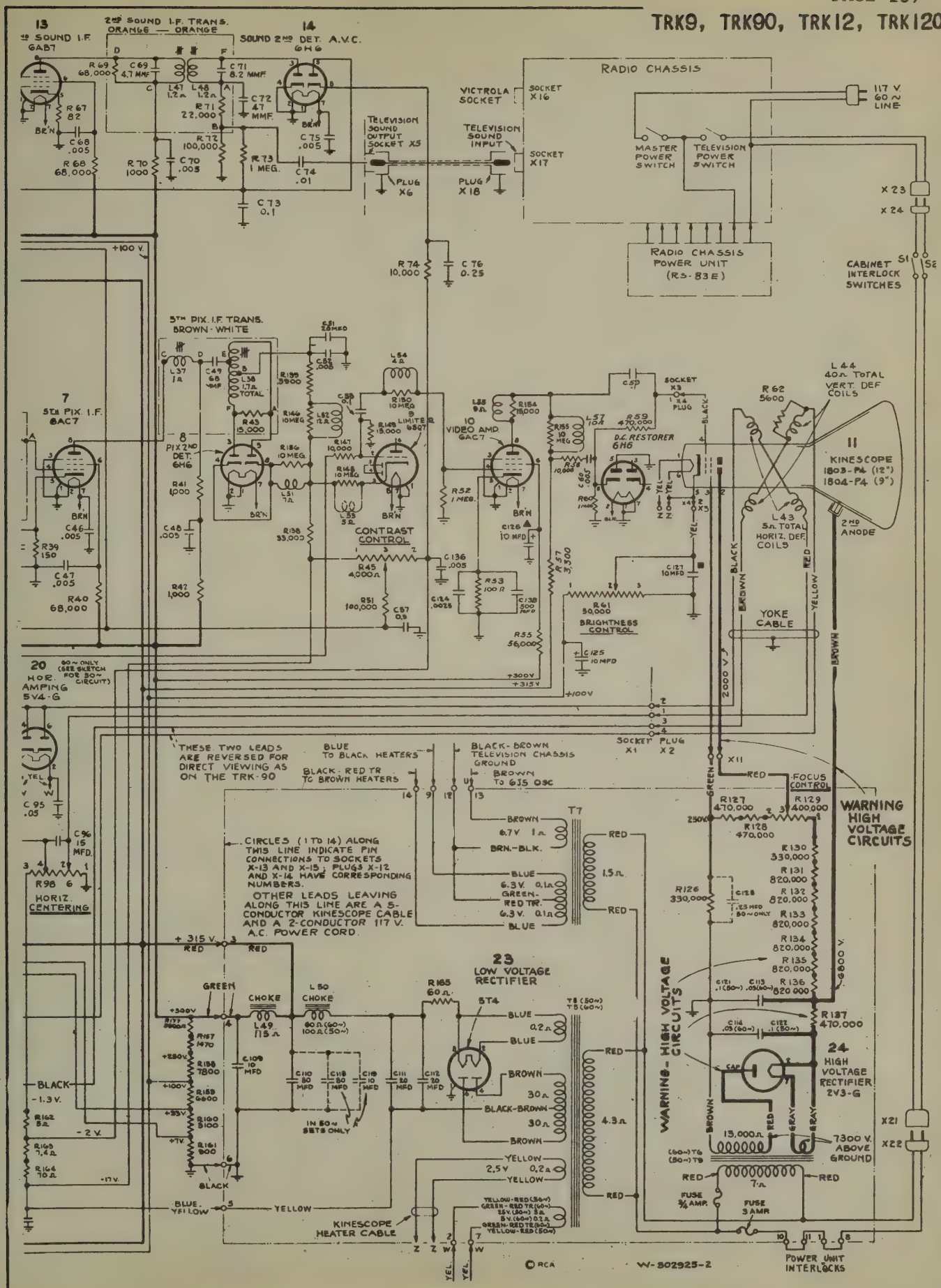



*Figure 11—Partial Schematic Diagram TRK-90 and TRK-120* **With D.C. Restorer.** *Otherwise same as Figure 10.*

# TRK9, TRK90, TRK12, TRK120

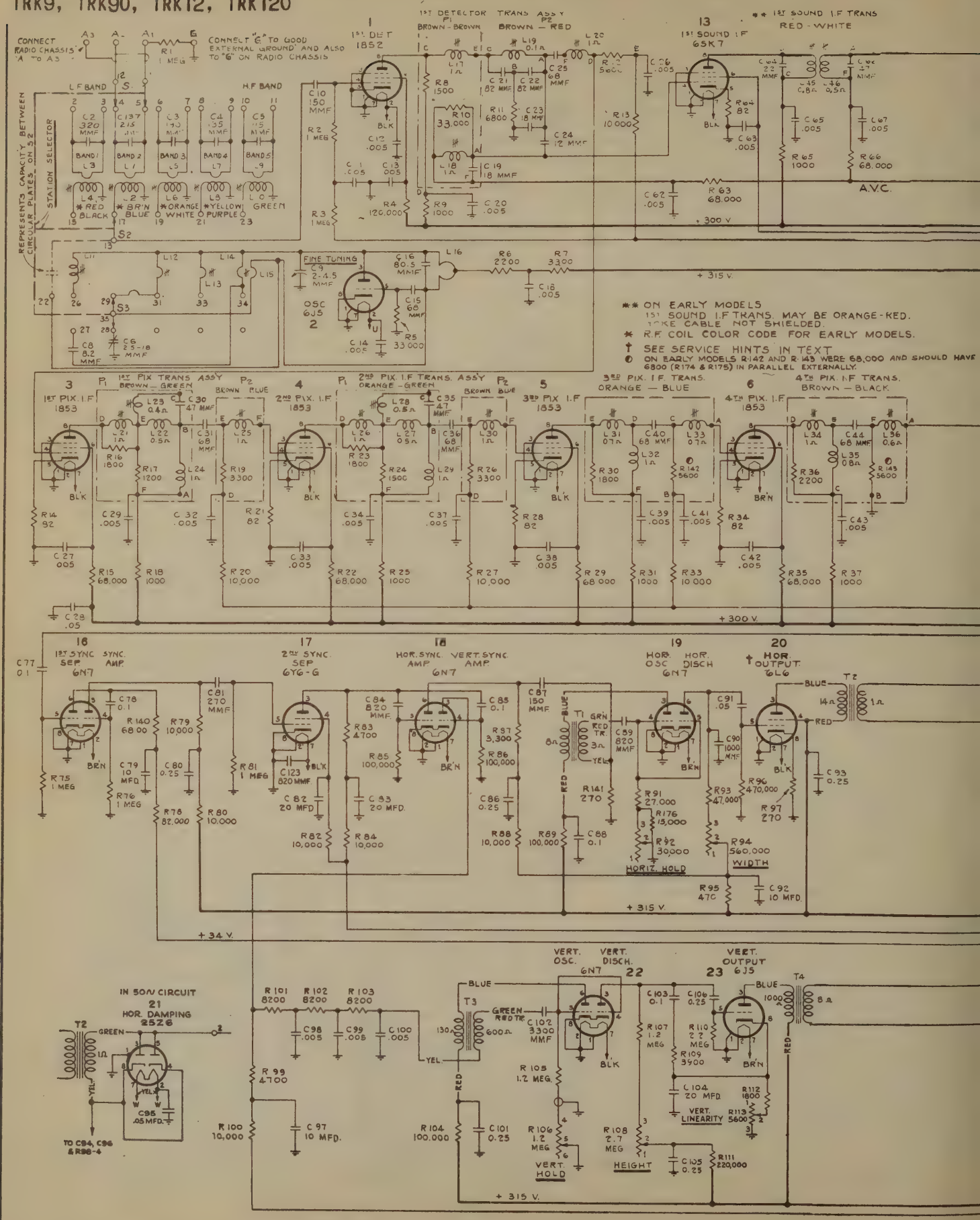
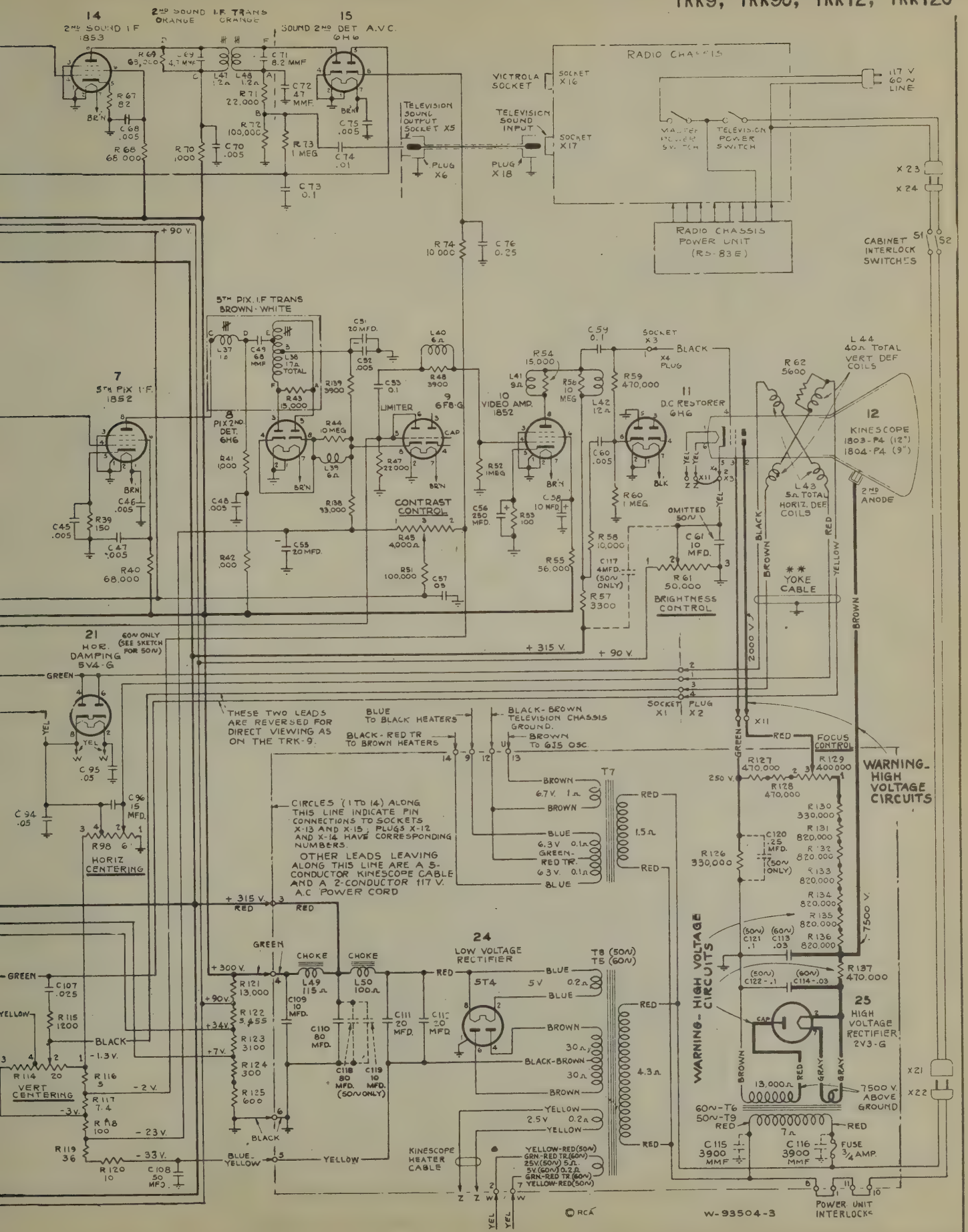

CONNECT RADIO CHASSIS "A" TO A3
CONNECT "E" TO GOOD EXTERNAL GROUND AND ALSO TO "6" ON RADIO CHASSIS
R1 1 MEG
L.F. BAND S.
H.F. BAND
STATION SELECTOR
REPRESENTS CAPACITY BETWEEN CIRCULAR PLATES ON S2
BAND 1 L3
BAND 2 L1
BAND 3 L5
BAND 4 L7
BAND 5 L9
* RED BLACK
* BR'N BLUE
* ORANGE WHITE
* YELLOW PURPLE
GREEN
1 1ST DET 1852
1ST DETECTOR TRANS ASSY P1 BROWN - BROWN P2 BROWN - RED
13 1ST SOUND I.F 6SK7
** 1ST SOUND I.F TRANS RED - WHITE
A.V.C.
+ 300 V.
FINE TUNING
OSC 6J5 2
+ 315 V.
** ON EARLY MODELS 1ST SOUND I.F TRANS. MAY BE ORANGE-RED. TOKE CABLE NOT SHIELDED.
* R.F. COIL COLOR CODE FOR EARLY MODELS.
† SEE SERVICE HINTS IN TEXT
◐ ON EARLY MODELS R-142 AND R-143 WERE 68,000 AND SHOULD HAVE 6800 (R174 & R175) IN PARALLEL EXTERNALLY.
3 1ST PIX I.F 1853
1ST PIX TRANS ASSY P1 BROWN - GREEN P2 BROWN BLUE
4 2ND PIX. I.F 1853
2ND PIX. I.F. TRANS. ASSY P1 ORANGE - GREEN P2 BROWN BLUE
5 3RD PIX I.F 1853
3RD PIX. I.F. TRANS. ORANGE — BLUE
6 4TH PIX. I.F 1853
4TH PIX. I.F. TRANS. BROWN — BLACK
+ 300 V.
16 1ST SYNC. SEP 6N7
SYNC. AMP.
17 2ND SYNC. SEP 6Y6-G
18 HOR. SYNC. AMP 6N7
VERT. SYNC. AMP.
19 HOR. OSC 6N7
HOR. DISCH.
† 20 HOR. OUTPUT 6L6
HORIZ. HOLD
WIDTH
+ 315 V.
+ 34 V.
IN SON CIRCUIT
21 HOR. DAMPING 2526
TO C94, C96 & R98-4
VERT. OSC. 6N7
VERT. DISCH.
22
23 VERT. OUTPUT 6J5
VERT. LINEARITY
VERT. HOLD
HEIGHT
+ 315 V.

*Figure 9—Schematic Diagram TRK-9 and TRK-12 Without Picture AVC.*

# TRK9, TRK90, TRK12, TRK120



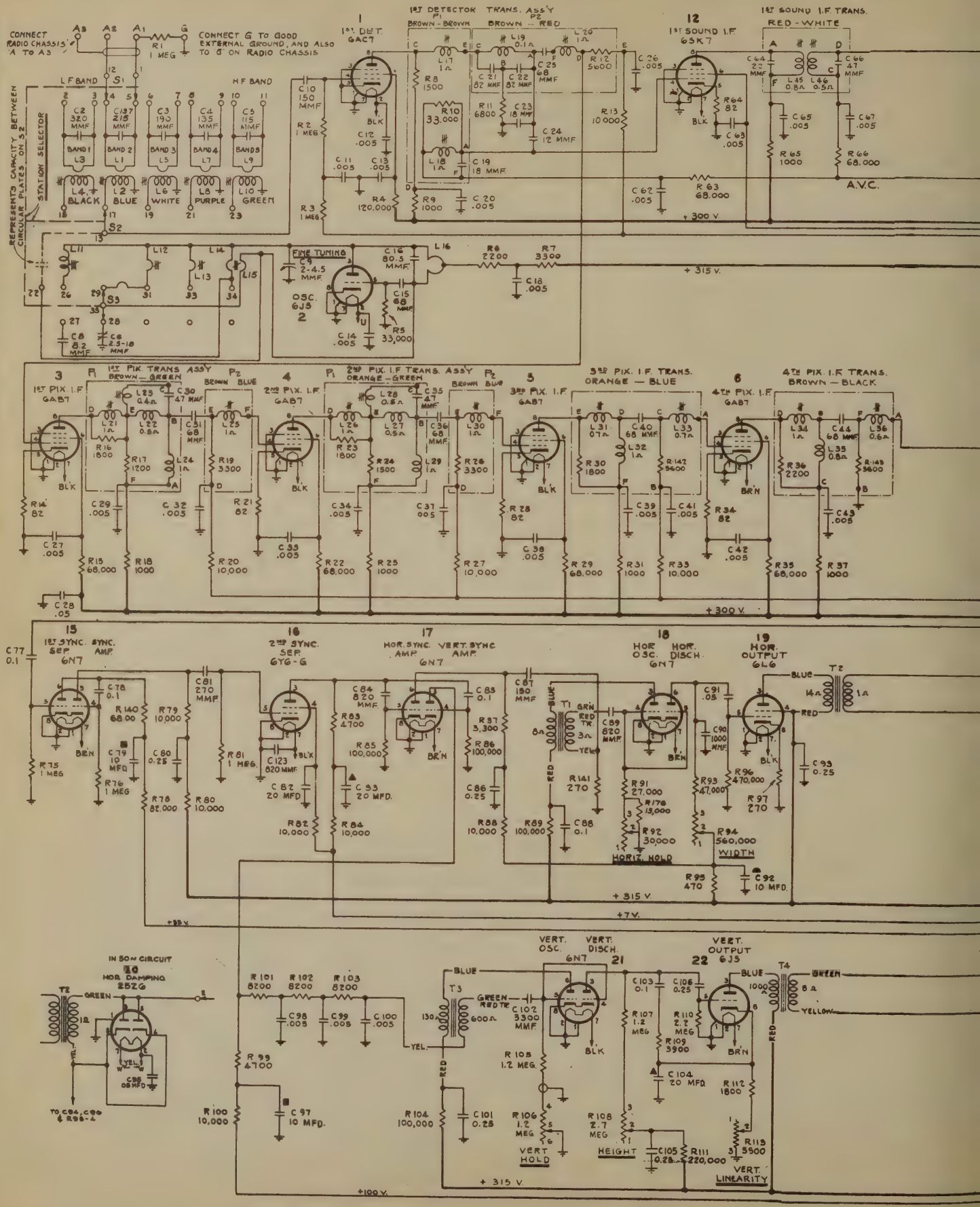
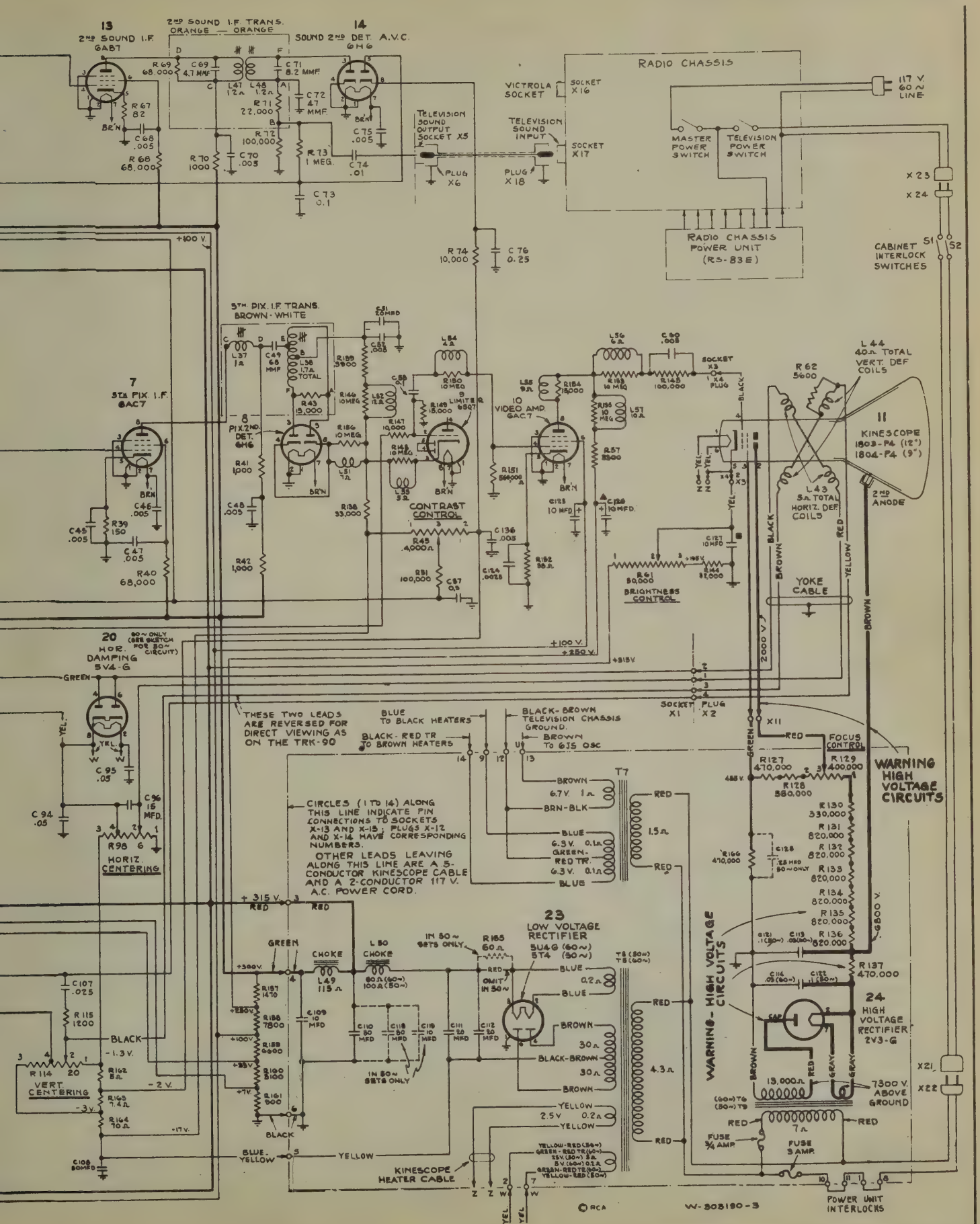



*Figure 10—Schematic Diagram TRK-90 and TRK-120* **Without D. C. Restorer.**


13
2ND SOUND I.F. 6AB7
2ND SOUND I.F. TRANS. ORANGE — ORANGE
14
SOUND 2ND DET. A.V.C. 6H6
RADIO CHASSIS
VICTROLA SOCKET
SOCKET X16
TELEVISION SOUND OUTPUT SOCKET X5
TELEVISION SOUND INPUT
SOCKET X17
PLUG X6
PLUG X18
MASTER POWER SWITCH
TELEVISION POWER SWITCH
117 V. 60 ~ LINE
X23
X24
RADIO CHASSIS POWER UNIT (RS-83E)
CABINET INTERLOCK SWITCHES
S1
S2
+100 V.
5TH PIX. I.F. TRANS. BROWN-WHITE
7
5TH PIX. I.F. 6AC7
8
PIX 2ND DET. 6H6
10
VIDEO AMP. 6AC7
CONTRAST CONTROL
BRIGHTNESS CONTROL
11
KINESCOPE 1803-P4 (12") 1804-P4 (9")
L44 40 Ω TOTAL VERT. DEF. COILS
L43 5 Ω TOTAL HORIZ. DEF. COILS
2ND ANODE
YOKE CABLE
20
HOR. DAMPING 5V4-G
80 ~ ONLY (SEE SKETCH FOR 80 ~ CIRCUIT)
HORIZ. CENTERING
VERT. CENTERING
THESE TWO LEADS ARE REVERSED FOR DIRECT VIEWING AS ON THE TRK-90
BLUE TO BLACK HEATERS
BLACK-RED TR TO BROWN HEATERS
BLACK-BROWN TELEVISION CHASSIS GROUND
BROWN To 6J5 OSC
SOCKET X1
PLUG X2
X11
FOCUS CONTROL
WARNING HIGH VOLTAGE CIRCUITS
CIRCLES (1 TO 14) ALONG THIS LINE INDICATE PIN CONNECTIONS TO SOCKETS X-13 AND X-15; PLUGS X-12 AND X-14 HAVE CORRESPONDING NUMBERS.
OTHER LEADS LEAVING ALONG THIS LINE ARE A 5-CONDUCTOR KINESCOPE CABLE AND A 2-CONDUCTOR 117 V. A.C. POWER CORD.
T7
BROWN 6.7 V. 1 Ω
BRN-BLK
BLUE 6.3 V. 0.1 Ω
GREEN-RED TR. 6.3 V. 0.1 Ω
BLUE
RED
1.5 Ω
+315 V.
23
LOW VOLTAGE RECTIFIER
5U4G (60 ~) 5T4 (50 ~)
IN 50 ~ SETS ONLY
CHOKE L49 115 Ω
CHOKE 80 Ω (60 ~) 100 Ω (50 ~)
BLUE 0.2 Ω
BROWN 30 Ω
BLACK-BROWN 30 Ω
BROWN
4.3 Ω
YELLOW 2.5 V. 0.2 Ω
YELLOW
KINESCOPE HEATER CABLE
WARNING-HIGH VOLTAGE CIRCUITS
24
HIGH VOLTAGE RECTIFIER 2V3-G
13,000 Ω
7300 V. ABOVE GROUND
7 Ω
FUSE 3/4 AMP
FUSE 3 AMP
POWER UNIT INTERLOCKS
© RCA
W-803190-3

# Television Service Suggestions

Some of the possible troubles that may become evident during air-check of Models TRK-9, -12, -90, -120 are listed below, together with the most likely causes of each trouble, based on field experience.

1. Connect the receiver for operation, being certain that all cables are plugged in correctly, and that all tubes are seated down in their correct sockets.

2. **Blown fuse; shorted high-voltage rectifier.** Turn the set on. Look to see that the high-voltage rectifier lights. If it does not, check the fuse. A shorted rectifier will cause the ¾ ampere fuse to blow.

3. **Intensely bright round spot; no deflection.** If an intensely bright round spot appears on the Kinescope, and cannot be dimmed with the brightness control, turn the set off immediately. This indicates lack of deflection and lack of voltage across the brightness control. Check for—

(a) Defective low-voltage rectifier (5T4 or 5U4-G).

(b) Bent-over pins on the octal plug on cable from the video chassis to the SPU.

(Note that a bright spot may appear for several seconds if the receiver is turned on again too soon after it has been shut off. Avoid doing this.)

4. **Thin vertical line; no horizontal deflection.** If only a thin vertical line appears on the Kinescope when the brightness control is advanced, it indicates lack of horizontal deflection. Check the 6N7 horizontal oscillator and the 6L6 horizontal output tube.

5. **Thin horizontal line; no vertical deflection.** If only a thin horizontal line appears, it indicates failure of vertical deflection. Check the 6N7 vertical oscillator and the 6J5 vertical output tube.

6. **Excessive hum; defective high-voltage filter.** Turn contrast control fully counter-clockwise and adjust the brightness control to secure faint illumination of the raster. "Lock in" any residual hum by adjusting the vertical hold control. Normally the hum should be scarcely discernible. Excessive hum may be caused by a defective (low value) filter resistor R137 in the SPU, which in turn may be caused by a shorted 2V3-G high-voltage rectifier. Observe necessary precautions before checking the filter.

7. **No focus; off-value high-voltage resistors.** Adjust the focus control to secure sharpest lines on the raster. The individual lines can be seen most readily by turning the horizontal hold control to the lowest frequency (counter-clockwise). The lines should be in sharpest focus at one setting of the focus control. Inability to pass through a definite point of focus indicates incorrect voltages, which may be caused by off-value resistors in the SPU. Inability to focus may also be due to a defective Kinescope.

8. **Failure to lock-in; sync trouble.** Turn band switch to a channel that is in operation. Adjust the fine-tuning control for clearest sound, which should be at approximately half-capacity position. Turn contrast control full counter-clockwise. Turn brightness control until the Kinescope is faintly illuminated. Turn contrast control clockwise until the picture signal is evident. Lock in the picture horizontally and vertically. Adjust the contrast and brightness controls for best contrast.

If the picture will not lock-in horizontally or vertically, change the 6N7 and/or 6Y6-G sync tubes: Interchanging 6N7's may correct the trouble. Otherwise check the resistors, capacitors and voltages in the sync circuits. The capacitors should be checked for opens and leakage. Do not forget that advancing the contrast control too far on a strong signal will cause the picture to "tear" out of horizontal sync.

9. **"Smeared" picture or insufficient contrast.** There should be a jumper in the Kinescope socket between the cathode and one side of the heater. Omission of this jumper may cause "smearing" of the picture when the contrast control is advanced for good contrast.

Check for presence of the jumper with an ohmmeter, and insert one if necessary. Diagonals may be used to cut out a partition for the jumper, which should be solid wire. Avoid breaking the socket wafer.

10. **Picture folded back at left-hand side.** If the picture is lapped-over, or folded back on the left-hand side, change the horizontal damper tube.

11. **No picture; weak picture.** If the station's sound is received, it is an indication that the oscillator and first detector are functioning. Run an RF sweep into the antenna and check with a CRO for over-all response at the picture 2nd-detector load resistor. If there is no response, check the picture-IF tubes and circuits. If response at the load resistor is normal, remove the sweep and feed a 10 mc, 400-cycle modulated signal into the 1st-detector grid. Note the amplitude of the 400-cycle signal at the load resistor, and then shift the CRO back through the video stage to localize the point at which the signal disappears.

12. **Picture signal too strong; contrast control ineffective.** In sets where the contrast control is a manual bias control for the picture-IF amplifier (TRK-9 and TRK-12 without AVC; all TRK-90 and TRK-120), a grid short in one of the picture-IF tubes will cause the tubes to operate near full gain regardless of the setting of the contrast control. The defective tube can be found by using the VoltOhmyst to check grid voltages throughout the picture-IF amplifier. First turn the contrast control counter-clockwise and measure the voltage from the arm of the contrast control to the chassis. This should be approximately −17 volts for TRK-90 and TRK-120, or −23 volts for TRK-9 and TRK-12 without AVC. Normally, this same voltage should then exist at each picture-IF grid and at the 1st-detector grid. (The last picture-IF tube has fixed bias.)

The same trouble can exist in TRK-9 and TRK-12 receivers with AVC on the picture-IF amplifier, but in this case the contrast control is the picture 2nd-detector load resistor and the amount of picture signal into the video amplifier can be controlled. In both types of receivers, in normal signal areas, the absence of bias on the picture-IF amplifier will cause over-loading of the last picture-IF tube with resultant grid current and distortion in this tube, which will produce a voltage across the grid resistor of this tube. In normal operation, there should be no grid current and therefore no voltage across this resistor. The VoltOhmyst can be used to check for presence of voltage.

Grid shorts can usually be located by tapping each tube very gently, or by changing one tube at a time. Shorts in '52 or '53 tubes can sometimes be cleared by tapping the base of the tube on a table, holding the tube in an upright position.

13. **Weak picture; insensitive receiver.** A simple sensitivity check can be made by removing the antenna from the receiver and turning the contrast control full clockwise with brightness control at normal position. This should produce some evidence of tube noise which will appear as speckles on the Kinescope raster. When the antenna is connected to the receiver, there should be more pronounced speckles due to random noise, streaks due to ignition interference from passing cars, and possibly hum lines that can be locked in vertically, due to sparking in 60-cycle circuits, diathermy, etc. Check each band for sensitivity. Noise conditions vary from band to band. Certain types of interference, such as diathermy, may exist in only one band and may be seen but not heard, or vice versa. Sensitivity can be estimated in this way, just as with an ordinary radio receiver, by observing the amount of noise and the strength of the weaker stations.

If the receiver is insensitive, check all tubes in the picture-IF amplifier and the 1st-detector by substituting a good tube in each socket. If the trouble is not due to tubes, it may be necessary to check the gain of each picture stage.

14. **Small picture size.** Adjust picture size, centering, and vertical linearity. Inability to secure a full-sized picture may be due to low-voltage on the 315-volt bus. Check the low-voltage rectifier. (On an improvised Kinescope mounting in a service shop, another cause for small picture size is due to placing the deflection yoke too far back on the neck of the Kinescope.)

15. **Insufficient width.** In case of insufficient width on 9-inch and 12-inch receivers, check voltage on the 315-volt bus that feeds the 6L6 horizontal output tube. If the voltage is low, change the low-voltage rectifier (5U4G or 5T4) and check heater voltage of this rectifier. Also check the 6L6.

With low line voltage, if the picture width is not sufficient,

(Continued)

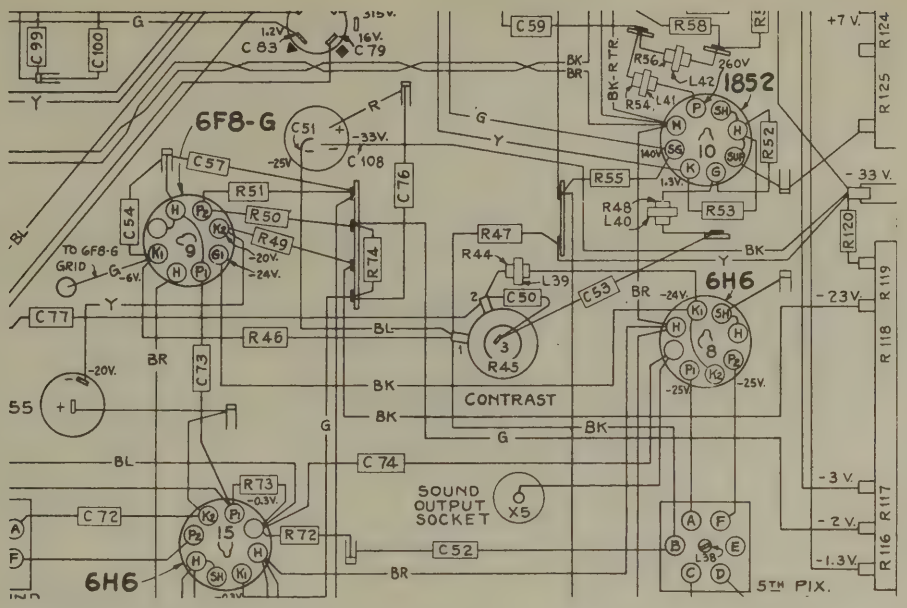



*Figure 12—Partial Video Chassis Wiring TRK-9 and TRK-12* **With Picture AVC.** *Otherwise same as Figure 13.*

## Television Service Suggestions (Continued)

the 5V4-G damper tube can be replaced by a 5Z4. This may cause a slight spreading of the picture on the left-hand side.

16. **Picture compressed on left-hand side.** Shrinking of the picture on the left-hand side may be caused by a defective 6L6 horizontal output tube. Also check 6L6 cathode resistor.

17. **Inability to center picture.** This may be due to low voltage across the centering control caused by a defective low-voltage rectifier or low line voltage. Another possibility is that the elements in the Kinescope may be tilted. This can be checked as follows:

With the brightness control at normal setting, turn the receiver on and observe the position of the illuminated spot during the few seconds before the horizontal and vertical deflection voltages start operating. The illuminated spot should be in the center of the Kinescope (its position during these few seconds is not affected by the centering controls). If the spot is off center, it is a definite indication that the Kinescope "gun" is tilted.

18. **Distorted sound or sound in picture.** An open in one side of the antenna transmission line can cause distorted sound. Other possibilities include:

(a) If the sound-IF response curve is not linear for 75 kilocycles on each side of 8.25 mc., distortion will result.

(b) Inaccurate adjustment of the oscillator frequency on any channel may result in no sound or distorted sound, due to the fact that the sound-IF beat frequency will not be 8.25 mc. If the oscillator frequency is too low, the beat note, instead of falling on the high-frequency slope of the sound-IF response curve, may fall on the low-frequency slope. In this case, the sound may be satisfactory, but operation on this side of the curve should be avoided. In some localities, it results in sound image interference from other channels.

A quick and definite method to check the oscillator frequency is as follows:

(a) Tune in a television station.

(b) Turn the fine-tuning trimmer to minimum capacity. This should produce some evidence of sound in the picture. The sound usually appears as horizontal bars of varying density, and these vary in step with the speech or music. The bars disappear when the voice or music stops.

(c) Turn the trimmer for best sound quality. This should correspond to approximately half-capacity of the trimmer.

(d) Turn the trimmer toward maximum capacity. If the slope of the sound-IF response curve is narrow, this will move the beat on to the peak of the response curve, producing low volume and severe distortion.

On service work in the home or where test equipment is not available, if one or more of the oscillator frequencies require re-adjustment, the recommended procedure is as follows:

(a) Tune in the television station on the channel which requires re-adjustment of the oscillator frequency.

(b) Turn the fine-tuning trimmer to minimum capacity.

(c) Turn the magnetite-core for the particular oscillator coil toward the highest frequency position (core moved away from the coil). This will definitely put sound in the picture. Turn the core in the opposite direction, to lower the oscillator frequency, until the sound is barely perceptible in the picture. Leave the core in this position.

(d) Now, by turning the fine-tuning trimmer to half-capacity, it should be possible to secure good tone quality with no trace of sound in the picture.

If the sound-IF is deliberately moved into the picture-IF by adjusting the oscillator core to produce the highest frequency, the effect of the sound-IF interference will produce a "reversed" image, somewhat like a film negative.

The customer should be instructed to adjust the fine-tuning control for best sound quality, at which point there is no sound in the picture. If the set is turned on in a cold room, it may be necessary for the customer to readjust the fine-tuning trimmer to compensate for the slight drift in oscillator frequency during the warm-up period.

On all converted receivers, the fine-tuning trimmer is permanently fastened to the fine-tuning control, so that it is not necessary to press in on the control knob. ("C" washers are slipped between the end of the shaft and the rubber drive and cement is used between the rubber drive cone and the cup on the fine-tuning trimmer.)

19. **Insufficient sound.** In locations remote from the transmitter, additional sound volume can be obtained in the 9-inch and 12-inch receivers by eliminating the inverse feedback in the audio amplifier of the radio chassis.

*(Continued)*

# TRK9, TRK90, TRK12, TRK120

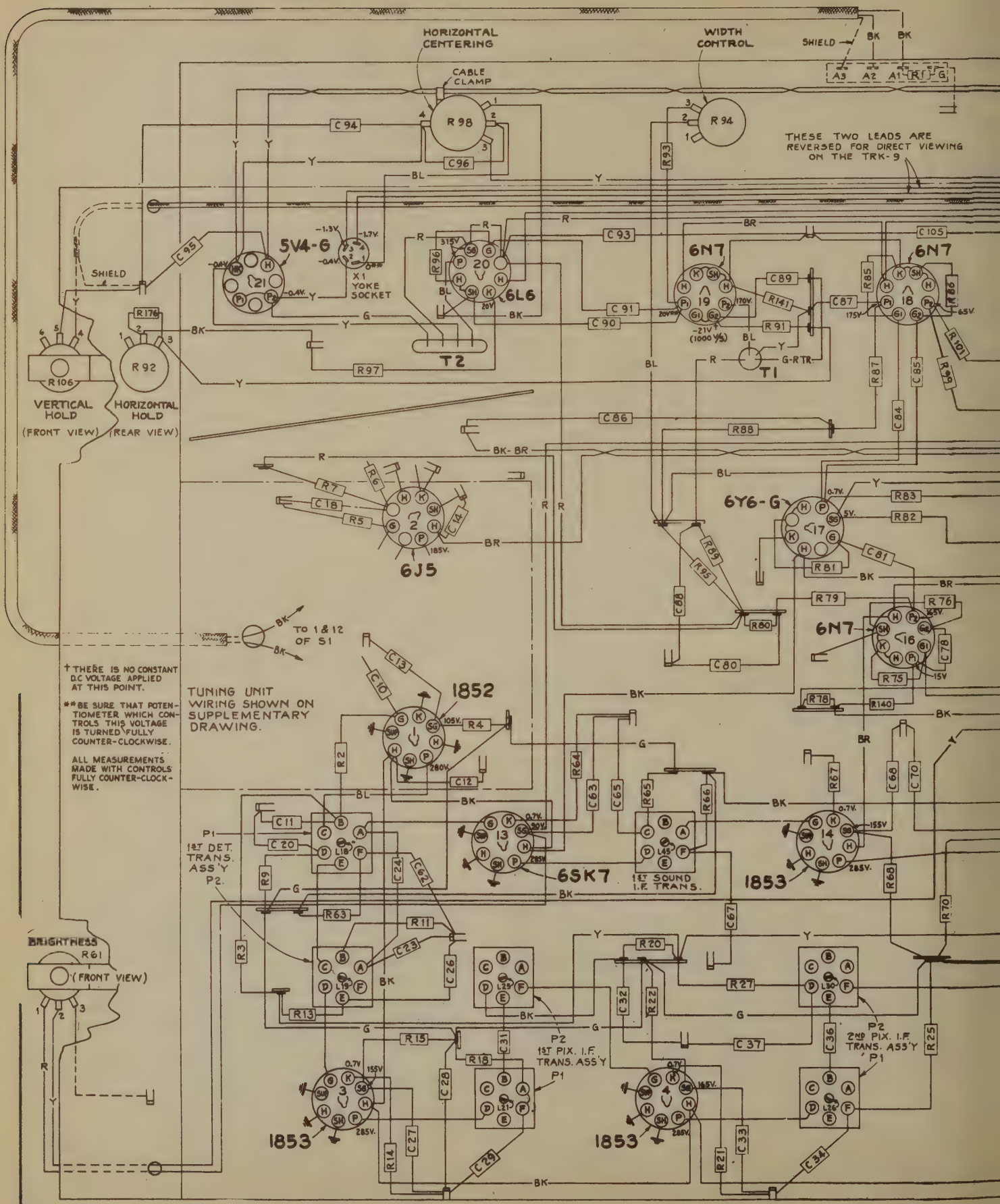
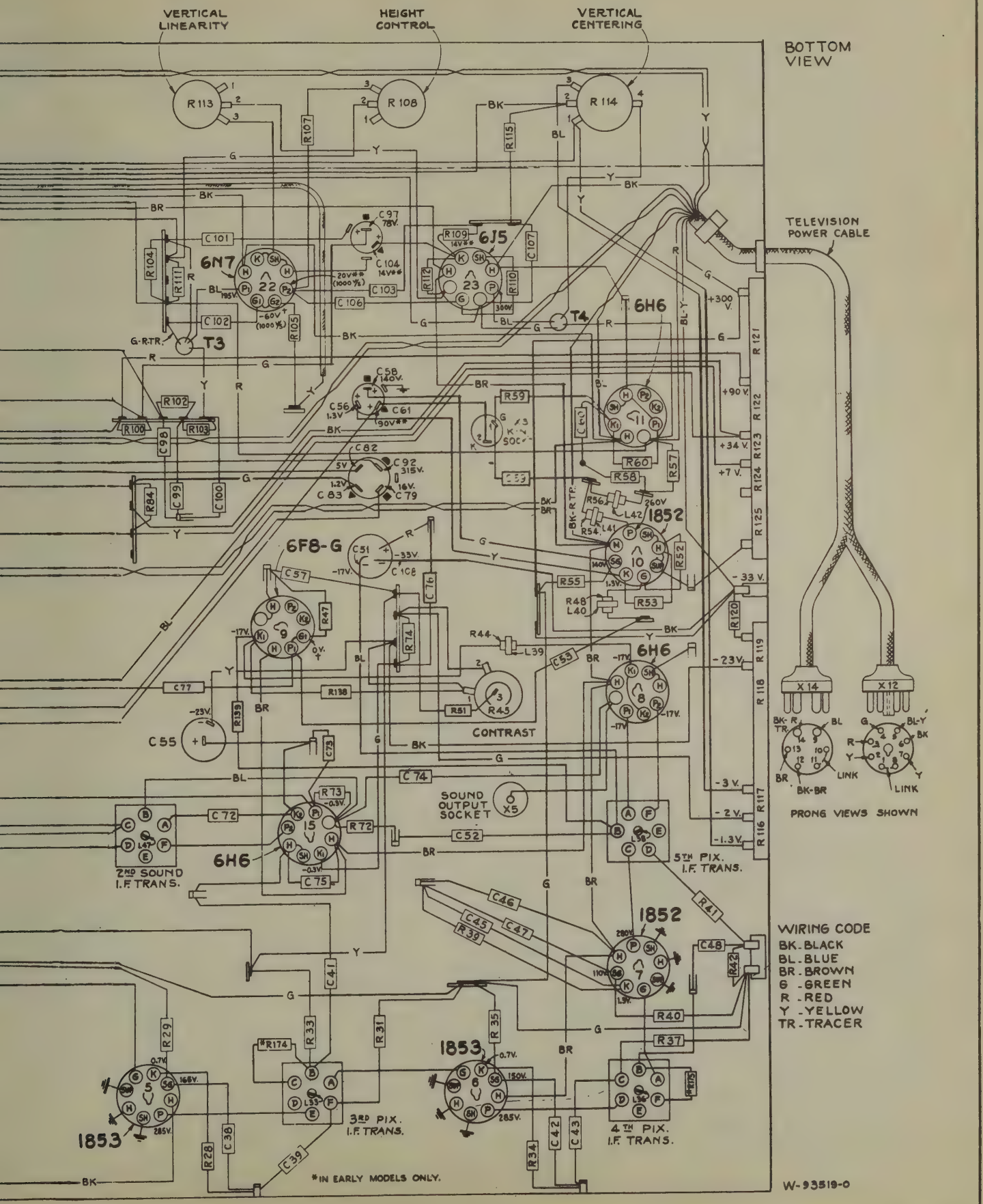



*Figure 13—Video Chassis Wiring TRK-9 and TRK-12 Without Picture AVC.*


VERTICAL LINEARITY
HEIGHT CONTROL
VERTICAL CENTERING
BOTTOM VIEW
TELEVISION POWER CABLE
R113
R108
R114
6N7
6J5
6H6
T3
T4
6F8-G
1852
1853
CONTRAST
SOUND OUTPUT SOCKET
X5
2ND SOUND I.F. TRANS.
3RD PIX. I.F. TRANS.
4TH PIX. I.F. TRANS.
5TH PIX. I.F. TRANS.
X14
X12
PRONG VIEWS SHOWN
LINK
WIRING CODE
BK. BLACK
BL. BLUE
BR. BROWN
G. GREEN
R. RED
Y. YELLOW
TR. TRACER
*IN EARLY MODELS ONLY.
W-93519-0

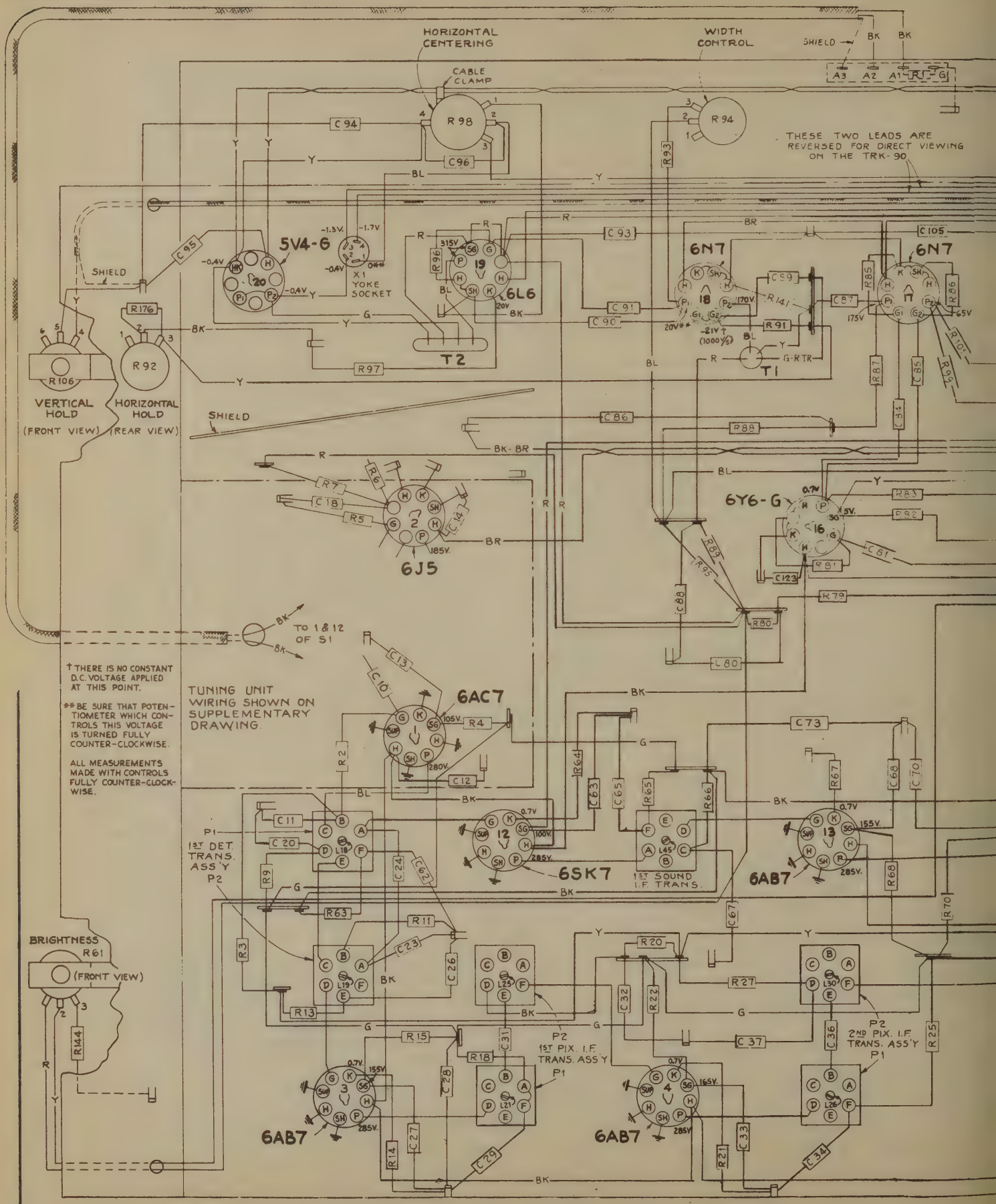
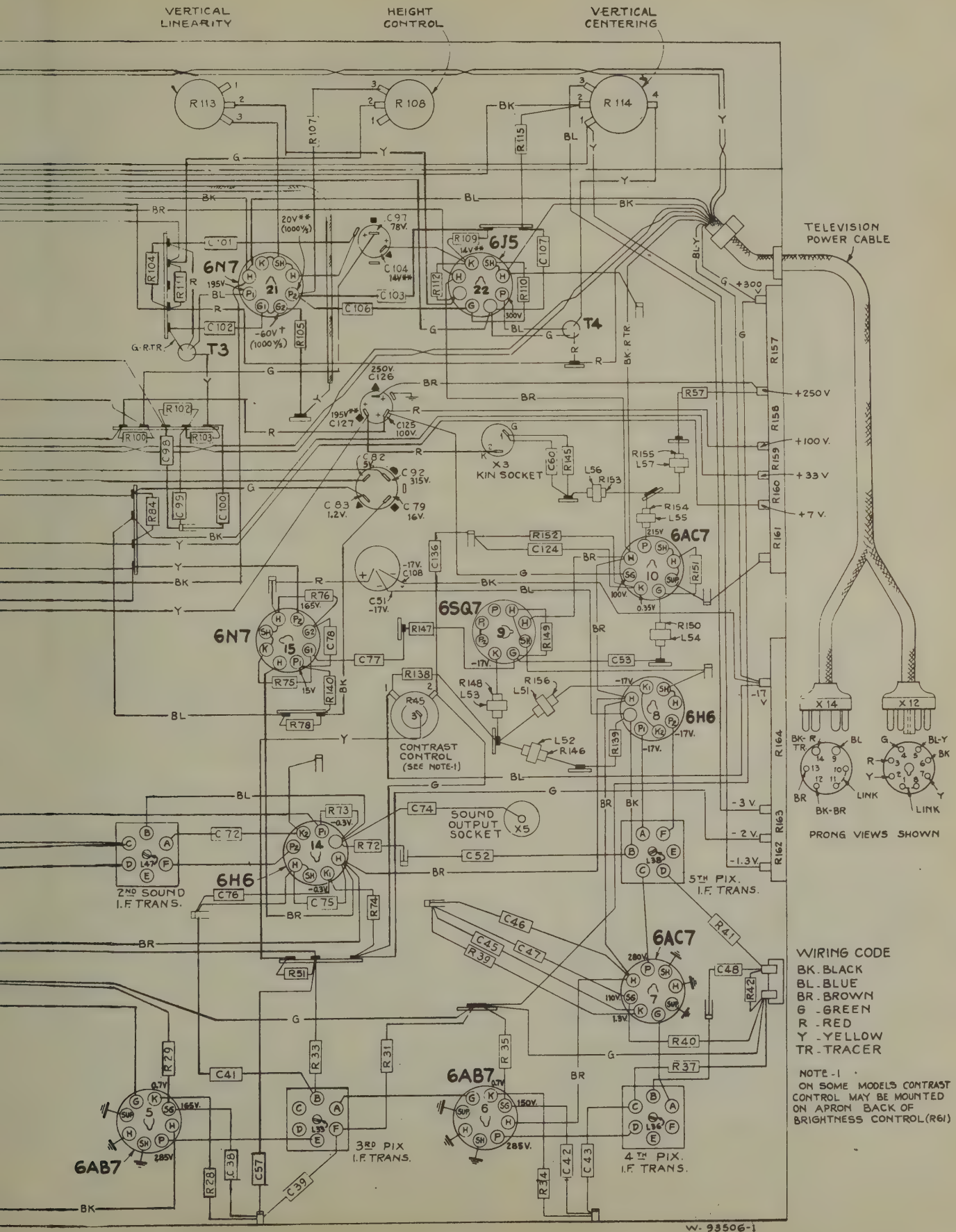
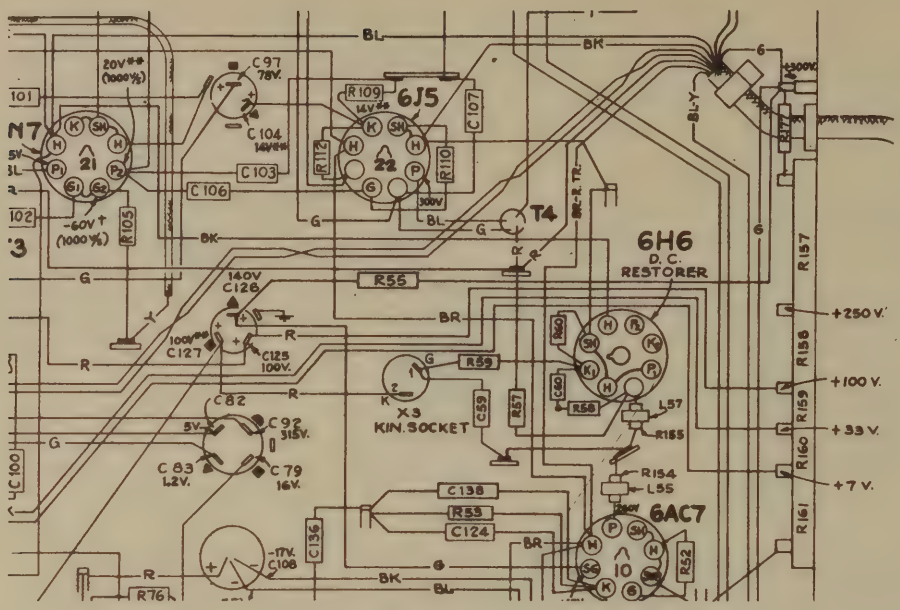



*Figure 14—Video Chassis Wiring TRK-90 and TRK-120* **Without D.C. Restorer.**


VERTICAL LINEARITY
HEIGHT CONTROL
VERTICAL CENTERING
R113
R108
R114
R107
R115
TELEVISION POWER CABLE
6N7
6J5
T3
T4
R104
R117
R102
R100
R103
C98
C95
C100
C84
C101
C102
C103
C104
C106
C107
C109
C110
C112
R105
R109
R110
R112
C97
C126
C127
C125
C82
C92
C83
C79
C60
R145
X3
KIN SOCKET
L56
R153
R155
L57
R154
L55
R57
R158
R159
R160
R161
R157
+250 V
+100 V.
+33 V
+7 V.
+300
6AC7
R152
C124
C136
C108
C51
R151
6SQ7
R147
R149
R150
L54
C77
C53
R76
C78
R75
R140
R78
R138
R45
R148
L53
R156
L51
L52
R146
R139
6H6
CONTRAST CONTROL (SEE NOTE-1)
R164
R163
R162
-3 V
-2 V.
-1.3V
-17 V
X14
X12
BK-R TR
BL
G
BL-Y
BK
BR
Y
LINK
BK-BR
PRONG VIEWS SHOWN
C72
R73
C74
SOUND OUTPUT SOCKET
X5
C52
2ND SOUND I.F. TRANS.
5TH PIX. I.F. TRANS.
C76
C75
R74
C46
C45
C47
R39
R41
C48
R42
R51
R40
R37
R29
C41
R33
R31
R35
6AB7
3RD PIX I.F. TRANS.
4TH PIX. I.F. TRANS.
R28
C38
C57
C39
R34
C42
C43
WIRING CODE
BK. BLACK
BL. BLUE
BR. BROWN
G. GREEN
R. RED
Y. YELLOW
TR. TRACER
NOTE-1
ON SOME MODELS CONTRAST CONTROL MAY BE MOUNTED ON APRON BACK OF BRIGHTNESS CONTROL (R61)
W-93506-1




NOTE: Brightness Control, R61, is connected as follows: Terminal 1 (Red) to SG of Tube 12 (100V.); Terminal 2 (Yellow) to C127; Terminal 3 (Bus) to Chassis, R144 being omitted.

*Figure 15—Partial Video Chassis Wiring TRK-90 and TRK-120* **With D.C. Restorer.** *Otherwise same as Figure 14.*

## Television Service Suggestions (Continued)

To do this, strip away a section of the insulation on the two leads from the radio chassis to the two-prong feedback plug. Twist the leads together, solder and tape. Remove the feedback plug from the speaker socket and tape it out of the way.

In Models TRK-9 and TRK-12, leave the feedback switch on radio chassis in the "with feedback" position (counter-clockwise).

20. **Interference on picture.** If the interference can not be definitely identified as coming from an external source such as diathermy, ignition, etc., check to see if it is present on the remaining channels and then remove the antenna from the television receiver to see if the interference continues.

The various forms of interference may be classified as follows:

(a) Microphonic streaks. Tap the video chassis. If this produces severe streaking or affects picture brightness, check for microphonic tubes and intermittent tubular capacitors and connections in the picture-IF and video stages. If the picture smears completely, check for intermittent grid shorts in the picture-IF tubes. If the tapping produces noise in the sound channel, as well as picture streaking, check for a microphonic oscillator or 1st-detector tube.

If tapping does not affect picture strength or sound, but does upset horizontal or vertical sync, check the sync and deflection tubes.

(b) Electrical interferences. This is caused by sparking or arcing contacts in electrical equipment. If the equipment is a-c operated, there may be horizontal bars or lines that can be locked in vertically. Turn on and off the lights, motors, etc., in the building to determine if the interference is coming from these sources. Occasionally a defective light bulb will arc and radiate interference in a definite frequency band.

(c) Diathermy. This varies in intensity (depending on proximity) from a faint horizontal herringbone streak to a solid black bar. If the diathermy equipment is on the same power supply as the television transmitter, the interference will be stationary. Otherwise it will travel up or down on the picture. In the latter case, if the interference is severe, the vertical oscillator may lock in occasionally on the diathermy, and the picture will then move up or down.

On remote pickup or chain telecasts, diathermy or other interference may be picked up on one of the remote links, and of course in this case nothing can be done at the receiver to reduce this interference.

(d) RF Interference. This can be produced by:

(1) Harmonics of a local short-wave station falling in the television channel.

(2) A station operating in the image-frequency band (which is approximately 8 to 14 mc higher than the oscillator frequency for any band).

(3) Strong signals in the picture-IF band (8.75 to 14 mc) leaking through to the grid of the 1st picture-IF tube.

RF interference patterns will alter in step with the modulation of the transmitter (dots and dashes or speech and music).

Orientation of the antenna and use of standard antenna reflectors are helpful in reducing the effects of RF interference. If the transmission line is a spaced type, a matching section at the receiver end may reduce interference due to (2) and (3) above.

The nature or source of RF interference can sometimes be determined by listening in on the output of the picture-IF channel. To do this, connect the input lead of an audio amplifier to the cathode of the picture 2nd-detector load resistor through an .01 mfd. capacitor. Connect the ground of the amplifier to the television chassis. This connection will spoil the picture but permits listening to the audio component in the picture channel. The sound will be a composite of picture, blanking, and sync signals, together with any audio modulation on the interfering station, making it somewhat difficult to pick out and identify the interference. A better method is to use the RCA Chanalyst UHF Converter: Place the input probe on the picture 2nd-detector load resistor and tune the converter through the picture-IF band width

(8.75 to approximately 14 mc). The RF interference can thus be picked out and identified.

(To gain experience in recognizing the visual aspect of various forms of interference, it is possible to produce the interference locally and study the results. Sparking motors and similar devices can be operated near the television receiver. A test oscillator can be coupled to the receiver input while a television program is being received. Tune the oscillator to the picture carrier frequency and then shift it up several megacycles to produce a range of beat frequencies with the picture carrier. The oscillator output can be increased and decreased, and modulation can be turned on and off to note the effects.)

21. **Failure to operate when installed in cabinet.**

(a) Check for grid shorts in '52 and '53 tubes.

(b) Check for bent-over pins on the octal plug from video chassis to SPU

22. **Interference from harmonics of horizontal deflecting circuits.** In 1st-production 9-inch and 12-inch receivers, harmonics of the horizontal deflecting frequency (15.75 kc) may cause interference on nearby radio receivers. In this case, install the following:

(1) A shielded yoke (RCA Stock No. 9857N). This has a metal pigtail at plug end of cable for grounding under one of the mounting screws on the horizontal output transformer. Unshielded yokes do not have this pigtail.

(2) A tube shield (RCA Stock No. 12181) on the 5V4G horizontal damper tube. Ground the tube shield to chassis with a pigtail.

(3) Remove the external ground connection from the television receiver.

## TRK-9, TRK-12, TRK-120 for 105-125 Volts—50-60 Cycle Power Supply

**General differences are as follows:**

### Chassis KC-4B, KC-4C, KC-4J

1. Horizontal Damping tube, formerly RCA-5V4G, changed to RCA-25Z6 and socket wiring revised.
2. TRK-9, TRK-12 only: Capacitor C-61 not connected. Its function is performed by an added capacitor C117 (4 mfd. —450 volts).

### Chassis KK-7D, KK-7E, KK-7J

1. Capacitors C-118 (80 mfd.) and C-119 (10 mfd.) added in parallel with C-110.
2. Capacitor C-128—TRK-120 or C-120—TRK-9, TRK-12 (0.25 mfd.) added in parallel with resistor R-166—TRK-120 without D.C. Restorer, or R-126—TRK-9, TRK-12, TRK-120 with D.C. Restorer.
3. Capacitors C-113 (0.03 mfd.) and C-114 (0.03 mfd.) changed to C-121 (0.1 mfd.) and C-122 (0.1 mfd.).
4. Power transformer (T-5) changed to (T-8) having a 25v. heater winding to supply the RCA-25Z6 horizontal damping tube.
5. High voltage power transformer (T-6) changed to (T-9).
6. Resistor R-165 is added (TRK-120 only).
7. Inductance L-50 is 100 ohms in these models.
8. An RCA-5T4 is used in these models as low voltage rectifier.

**In addition Kinescope shielding is provided as follows:**

1. A metallic conical section is installed in the cabinet to shield the Kinescope bulb.
2. A double metallic cylindrical section is installed with the deflecting yoke mounting assembly to shield the deflecting yoke proper. The accompanying illustration shows its assembly.

**CAUTION:** The conical shield is of the proper size to permit installing the 12AP4/1803-P4 Kinescope with its protective cardboard sleeve. The latter should **never** be removed.

To prevent Kinescope breakage, when installing a Kinescope, the deflecting yoke and shield assembly must be in place. To prevent breakage of Kinescope when removing the deflecting yoke and shield assembly the Kinescope must be removed first.

**Replacing or orienting deflecting yoke:**

1. Remove Kinescope.
2. Loosen yoke support bracket wing nuts and remove complete yoke and shield assembly.
3. Remove outer shield. Loosen yoke clamp screws to permit removal or orientation of yoke. If it is necessary to orient yoke, pull yoke out so it extends about one inch. Tighten screws just enough to hold yoke but not too tight as it may be necessary to turn it in this extended position. Replace the inner shield and yoke in the yoke mounting brackets.
4. Replace Kinescope and protective glass cover.
5. Move the inner shield and yoke assembly vertically until yoke is gently touching Kinescope bulb. Tighten yoke bracket wing nuts.
6. Rotate yoke carefully with one hand to orient raster or picture.
7. Remove Kinescope.
8. Remove carefully (so as not to disturb yoke adjustment) the inner shield and yoke assembly. Place the latter on a flat surface with the extended yoke end flush to surface. Press inner shield gently down until yoke edge is flush with inner shield edge. Tighten yoke clamp screws evenly by first pulling one up and then the other.
9. Assemble outer shield to inner shield and yoke assembly so bottoms of shields are flush.
10. Replace complete shield and yoke assembly in the yoke support bracket.
11. Replace Kinescope and tighten protective glass cover.
12. Push gently complete assembly up flush against the Kinescope bulb. Tighten wing nuts.

**IMPORTANT:** 1. The hole in the conical metallic shield must line up with the hole in the protective sleeve to permit connection of the second anode cable.

2. Do not jar or drop the shields and keep away from the loudspeaker field coil to prevent magnetization.

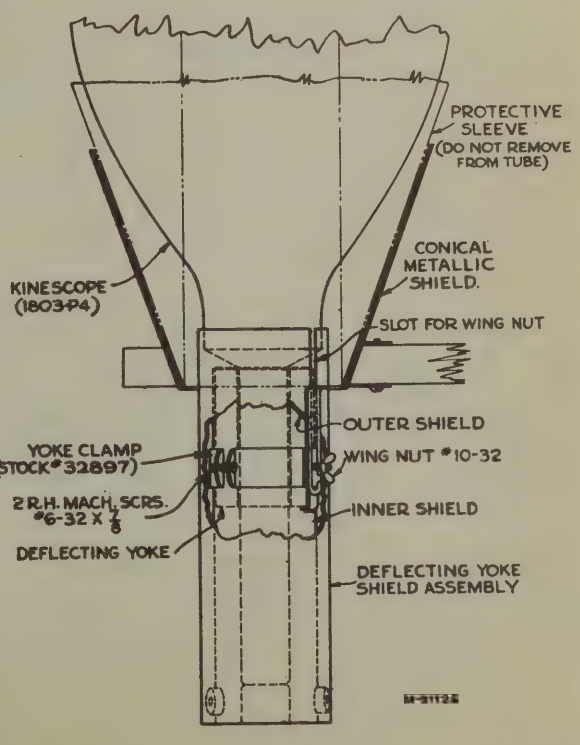



*Figure 18—Assembly Details, Showing Kinescope and Deflecting Yoke Shielding*

# TRK9, TRK90, TRK12, TRK120

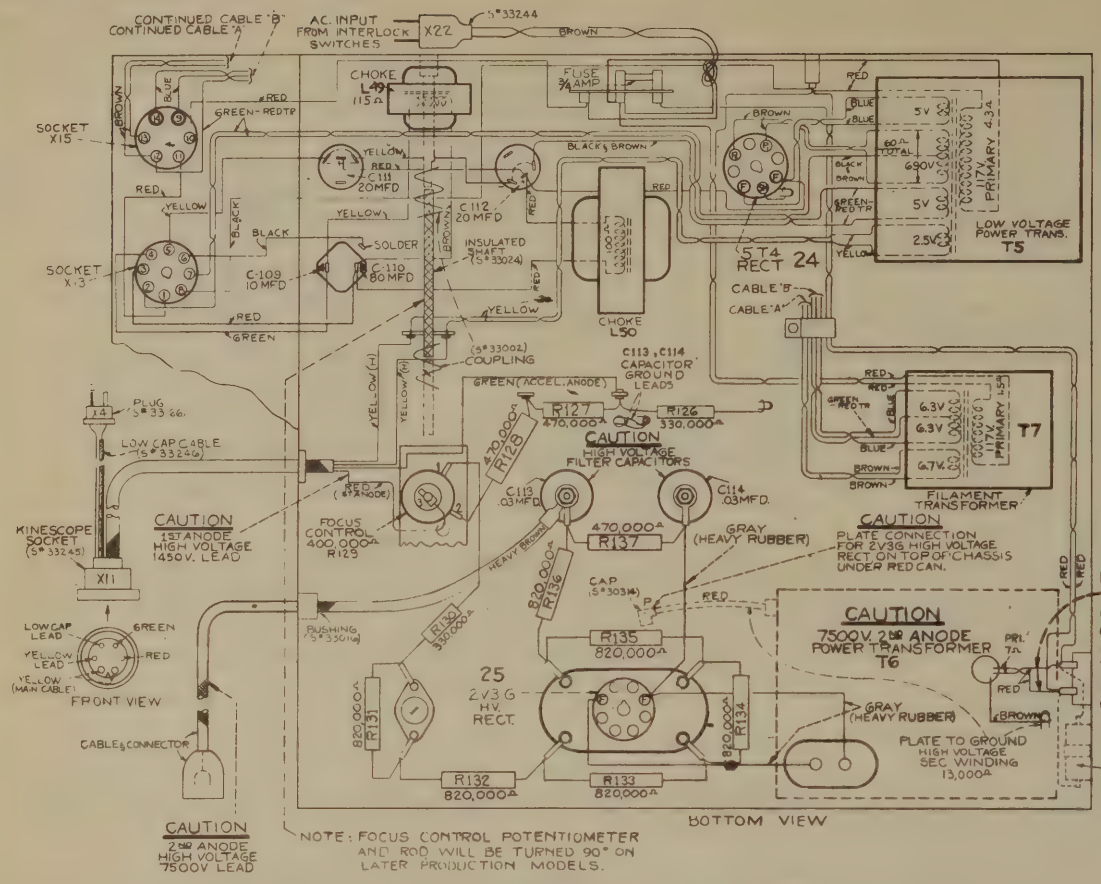



*Figure 16—Television SPU Wiring TRK-9 and TRK-12 (60 cycle models)*

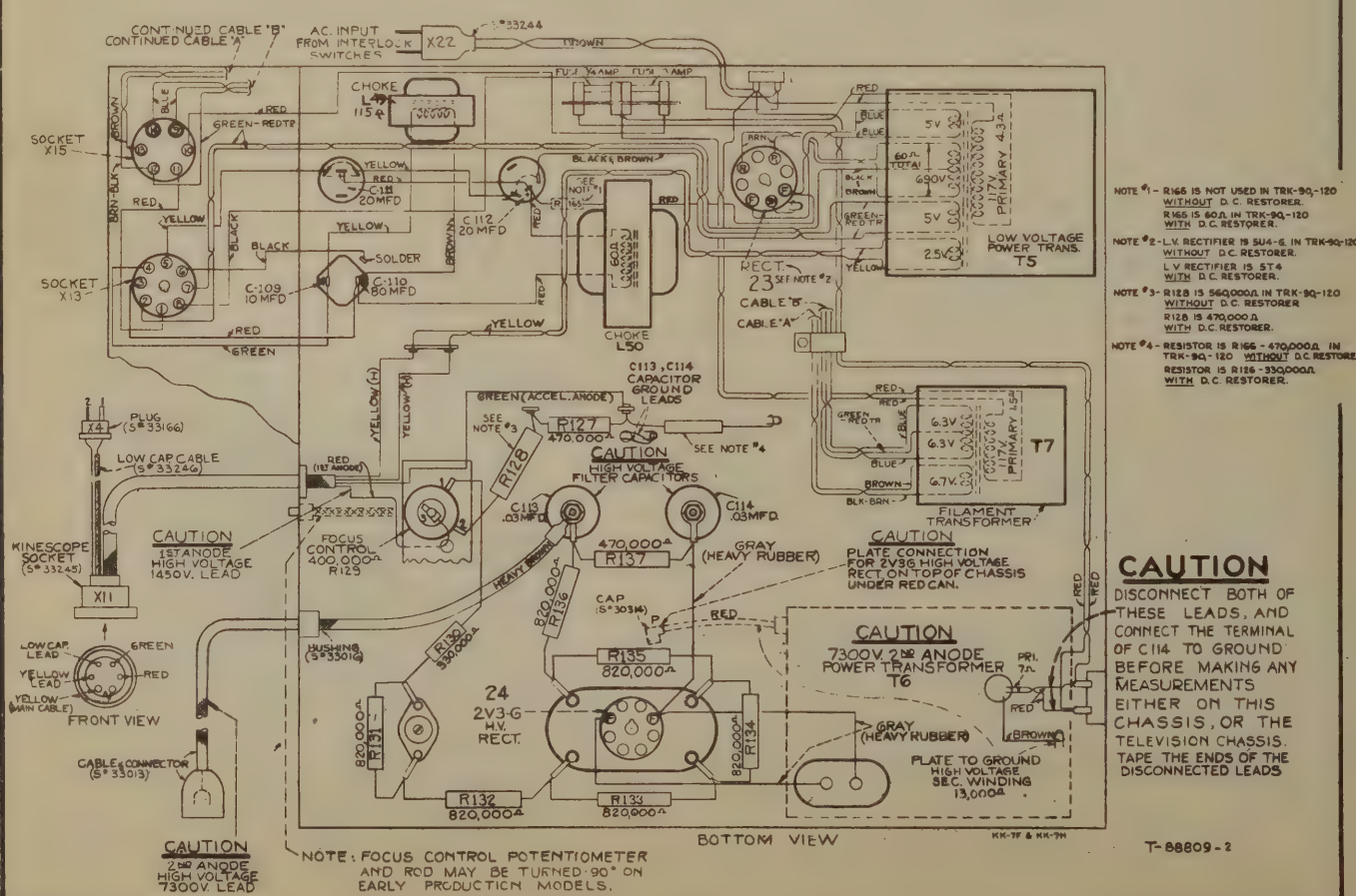

CONTINUED CABLE "B"
CONTINUED CABLE "A"
AC. INPUT FROM INTERLOCK SWITCHES
X22
S*33244
BROWN
CHOKE L49 115Ω
FUSE ¾ AMP
SOCKET X15
SOCKET X13
C-109 10 MFD
C-110 80 MFD
C111 20MFD
C112 20 MFD
SOLDER
CHOKE L50
RECT. 23 SEE NOTE #2
LOW VOLTAGE POWER TRANS. T5
5V
690V
2.5V
PRIMARY 4.3A
CABLE "B"
CABLE "A"
C113, C114 CAPACITOR GROUND LEADS
GREEN (ACCEL. ANODE)
SEE NOTE #3
R127 470,000Ω
SEE NOTE #4
R128
R126 330,000Ω
CAUTION HIGH VOLTAGE FILTER CAPACITORS
C113 .03MFD
C114 .03MFD.
6.3V
6.7V
T7
FILAMENT TRANSFORMER
PLUG (S*33166)
LOW CAP CABLE (S*33246)
KINESCOPE SOCKET (S*33245)
X11
CAUTION 1ST ANODE HIGH VOLTAGE 1450V. LEAD
FOCUS CONTROL 400,000Ω R129
470,000Ω R137
GRAY (HEAVY RUBBER)
CAUTION PLATE CONNECTION FOR 2V3G HIGH VOLTAGE RECT. ON TOP OF CHASSIS UNDER RED CAN.
CAP. (S*30314)
820,000Ω R136
BUSHING (S*33016)
R130 330,000Ω
CAUTION 7300V. 2ND ANODE POWER TRANSFORMER T6
PRI. 7A.
GRAY (HEAVY RUBBER)
PLATE TO GROUND HIGH VOLTAGE SEC. WINDING 13,000Ω
R135 820,000Ω
24 2V3-G H.V. RECT.
R131 820,000Ω
R134 820,000Ω
R132 820,000Ω
R133 820,000Ω
LOW CAP LEAD
GREEN
YELLOW LEAD
RED
YELLOW (MAIN CABLE)
FRONT VIEW
CABLE & CONNECTOR (S*33013)
CAUTION 2ND ANODE HIGH VOLTAGE 7300V LEAD
NOTE: FOCUS CONTROL POTENTIOMETER AND ROD MAY BE TURNED 90° ON EARLY PRODUCTION MODELS.
BOTTOM VIEW
NOTE #1 - R165 IS NOT USED IN TRK-90,-120 WITHOUT D.C. RESTORER. R165 IS 60Ω IN TRK-90,-120 WITH D.C. RESTORER.
NOTE #2 - L.V. RECTIFIER IS 5U4-G IN TRK-90-120 WITHOUT D.C. RESTORER. L.V. RECTIFIER IS 5T4 WITH D.C. RESTORER.
NOTE #3 - R128 IS 560,000Ω IN TRK-90-120 WITHOUT D.C. RESTORER R128 IS 470,000Ω WITH D.C. RESTORER.
NOTE #4 - RESISTOR IS R166 - 470,000Ω IN TRK-90-120 WITHOUT D.C. RESTORER. RESISTOR IS R126 - 330,000Ω WITH D.C. RESTORER.
CAUTION
DISCONNECT BOTH OF THESE LEADS, AND CONNECT THE TERMINAL OF C114 TO GROUND BEFORE MAKING ANY MEASUREMENTS EITHER ON THIS CHASSIS, OR THE TELEVISION CHASSIS. TAPE THE ENDS OF THE DISCONNECTED LEADS
KK-7F & KK-7H
T-88809-2

*Figure 17—Television SPU Wiring TRK-90 and TRK-120 (60 cycle models)*

# Radio Receiver Chassis No. RC-427, RC-427A, RC-427F, RC-427G and Socket Power Unit No. RS-83E

## Three-Band, Electric-Tuning, A-C, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" band) | 540-1,720 kc |
| Medium Wave ("B" band) | 2.3-7.0 mc |
| Short Wave ("C" band) | 7.0-22 mc |
| Intermediate Frequency | 455 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6K7 | R-F Amplifier |
| (2) RCA-6A8 | 1st Detector |
| (3) RCA-6J7 | Oscillator |
| (4) RCA-6K7 | 1st I-F Amplifier |
| (5) RCA-6K7 | 2nd I-F Amplifier |
| (6) RCA-6R7 | 2nd-Det., A.F., A.V.C., and Muting |
| (7) RCA-6J5 | 2nd A-F Amplifier |
| (8) RCA-6J5 | Phase Inverter |
| (9) RCA-6F6 | Power Output |
| (10) RCA-6F6 | Power Output |
| RC-427 and RC-427A only: RCA6U5 | Magic Eye |
| (11) RCA-5U4G (In RS-83E SPU) | Full-Wave Rectifier |

Dial Lamps ..... { Two Mazda No. 44, 6.3 volts, .25 amp. / One Mazda No. 47, 6.3 volts, .15 amp.

(The Mazda No. 47 is the electric tuning set-up lamp, located at center of dial.)

Power Supply Rating ..... 105-125 volts, 50-60 cycles, 120 watts

POWER OUTPUT

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER (RL-70F-5)

| | |
|---|---|
| Type | 12-inch electrodynamic |
| Voice-Coil Impedance | 2.2 ohms at 400 cycles |

## General Description

Radio receiver chassis No. RC-427 is used in RCA Victor Television Console Model TRK-12; RC-427A in TRK-9; RC-427F in TRK-120; and RC-427G in TRK-90.

The audio output of the television chassis is connected to the audio input of the radio chassis by means of jack X-17 and section S7 of the fidelity switch. The functions of this switch are tabulated on a following page.

A separate plug-in power unit, RS-83E, is used to supply heater and plate voltages to the radio chassis. Service data and diagram for this power unit are shown below.

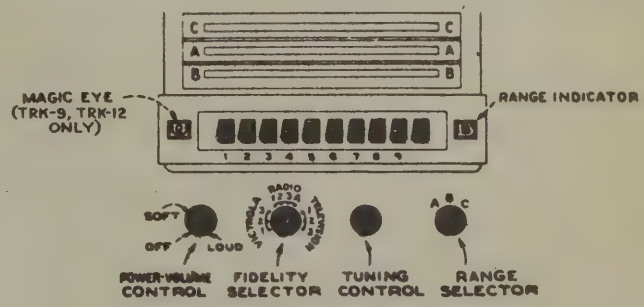



*Figure 19—Operating Controls (Radio)*

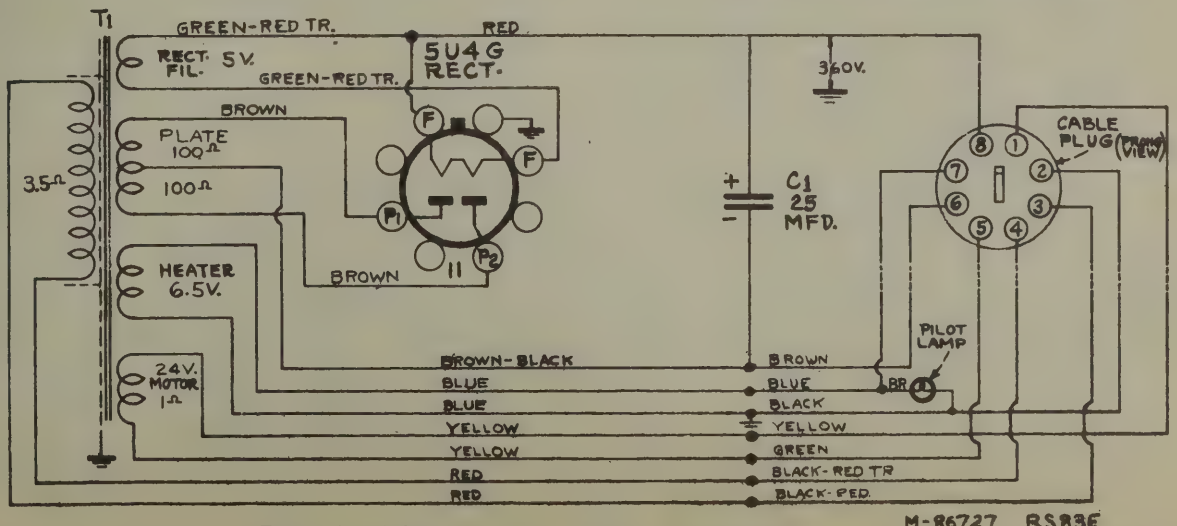



*Figure 20—Schematic Diagram Radio SPU, RS-83E*

# Electric Tuning Mechanism

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken.

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

## LUBRICATION

**Motor bearings** and **gear bearings;** use light machine oil.
**Gear faces;** use "Pure Oil No. 611" or petroleum jelly.
**Dial-Indicator pulleys** and **rails;** use "Castordag" or petroleum jelly.
**Selector disc;** apply ***thin*** film of petroleum jelly.

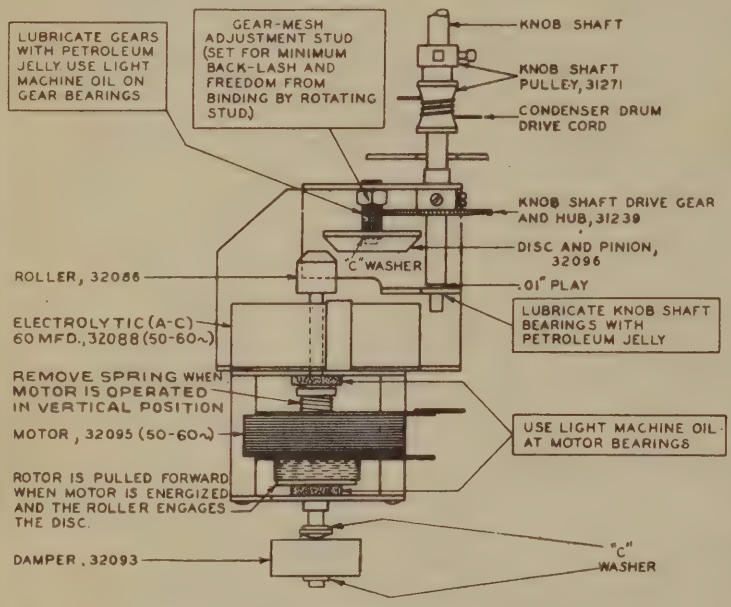
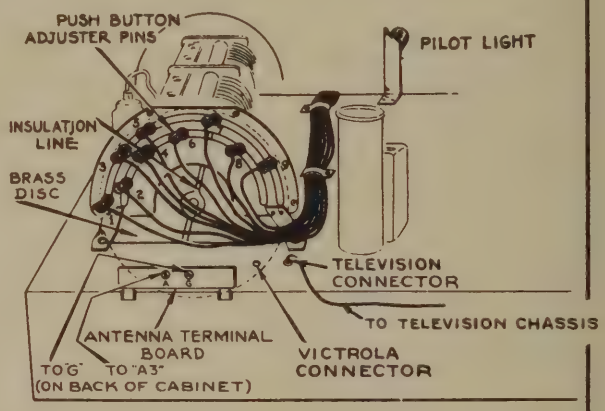

LUBRICATE GEARS WITH PETROLEUM JELLY USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUD (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUD)
KNOB SHAFT
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD
KNOB SHAFT DRIVE GEAR AND HUB, 31239
DISC AND PINION, 32096
"C" WASHER
.01" PLAY
ROLLER, 32086
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ELECTROLYTIC (A-C) 60 MFD., 32088 (50-60~)
REMOVE SPRING WHEN MOTOR IS OPERATED IN VERTICAL POSITION
MOTOR, 32095 (50-60~)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ROLLER ENGAGES THE DISC.
DAMPER, 32093
"C" WASHER

*Figure 21—Detail of Tuning Motor Drive*




| Station Button | Color of Lead To Station-Setting Contact | Station Button | Color of Lead To Station-Setting Contact |
|---|---|---|---|
| No. 1 | Yellow-green | No. 6 | Red |
| No. 2 | Black | No. 7 | Red-black |
| No. 3 | Brown | No. 8 | Brown-black |
| No. 4 | Blue | No. 9 | Red-yellow |
| No. 5 | Green | | |

*Figure 22—Electric Tuning Adjustments*

# Adjustments for Electric Tuning

With power turned off, disconnect the antenna transmission line and ground connection, turn fidelity control to radio (3rd radio position — 6th position from full counter-clockwise). Remove the back from the cabinet and reconnect the antenna transmission line and ground connection. The two interlock switches on the side panels should not be touched and care should be taken not to press on them when making the push-button set-up. Then turn on power, set range selector to "A," allow a few moments warm-up period and proceed as follows:

1. Make a list of the desired nine stations, arranged in order from low to high frequencies.
2. Turn on power-volume control, turn range selector to "A" band, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list.
5. Hold down the "dial-tuning" button and press down station button No. 1 (left-hand). Both buttons will stay down. Move station adjuster contact pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out completely.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Tune to some other section on the dial, and then press down station button No. 1 again; the electric tuning mechanism will function to tune in the first station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

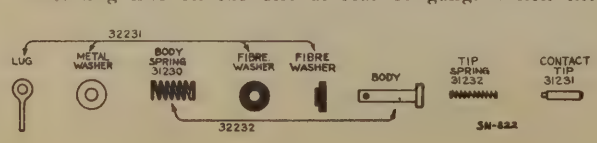



*Figure 23—Components of Station Setting Contact*

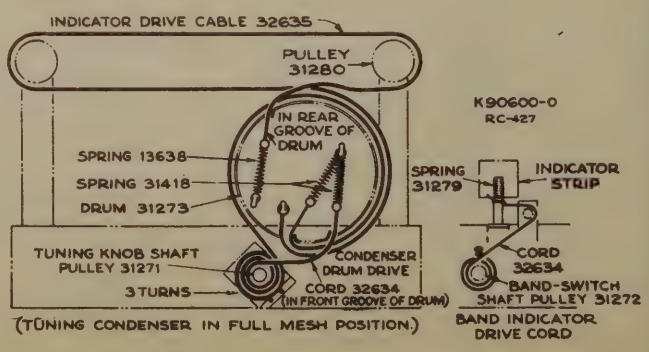



*Figure 24—Dial Mechanism*

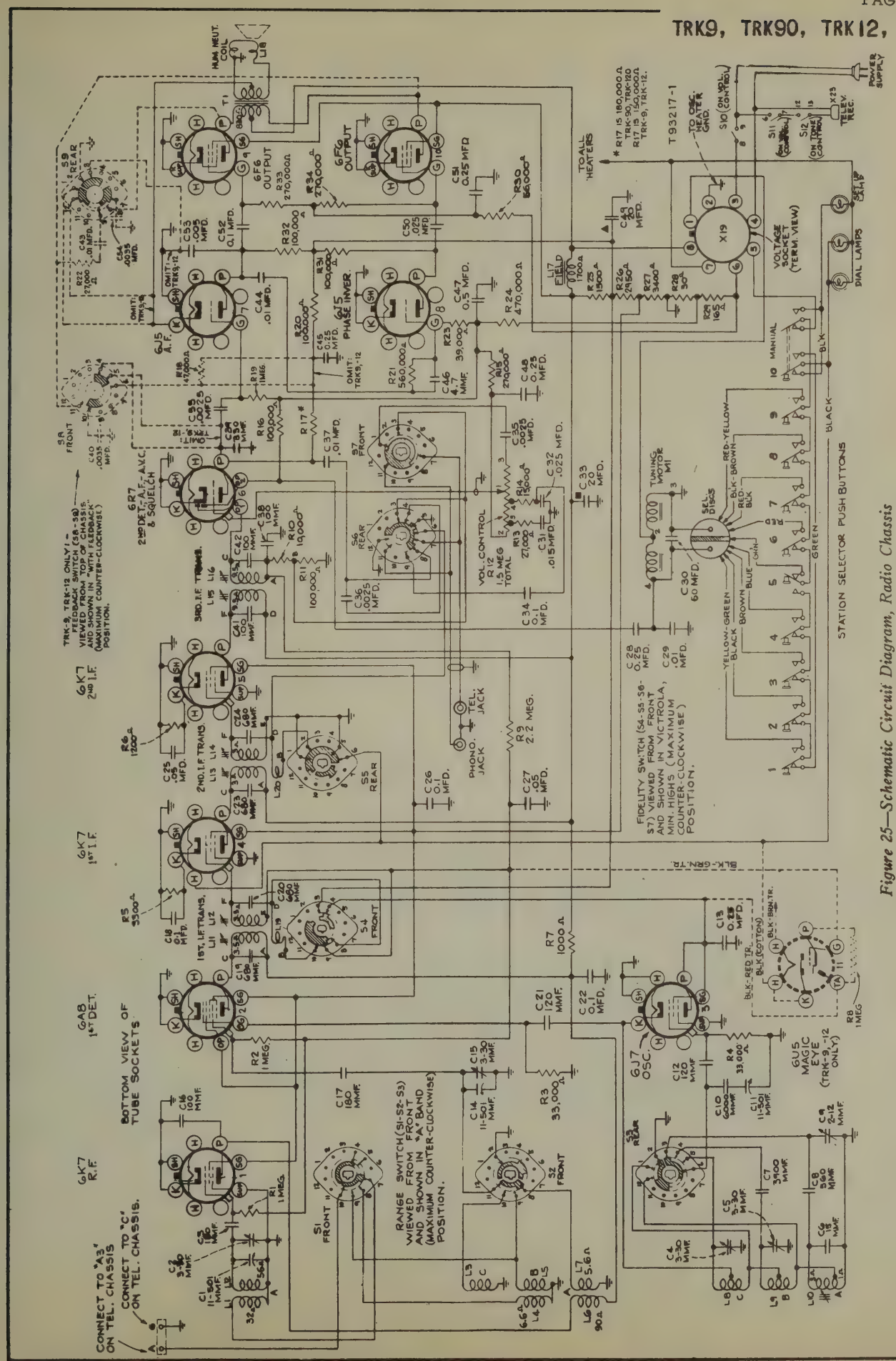
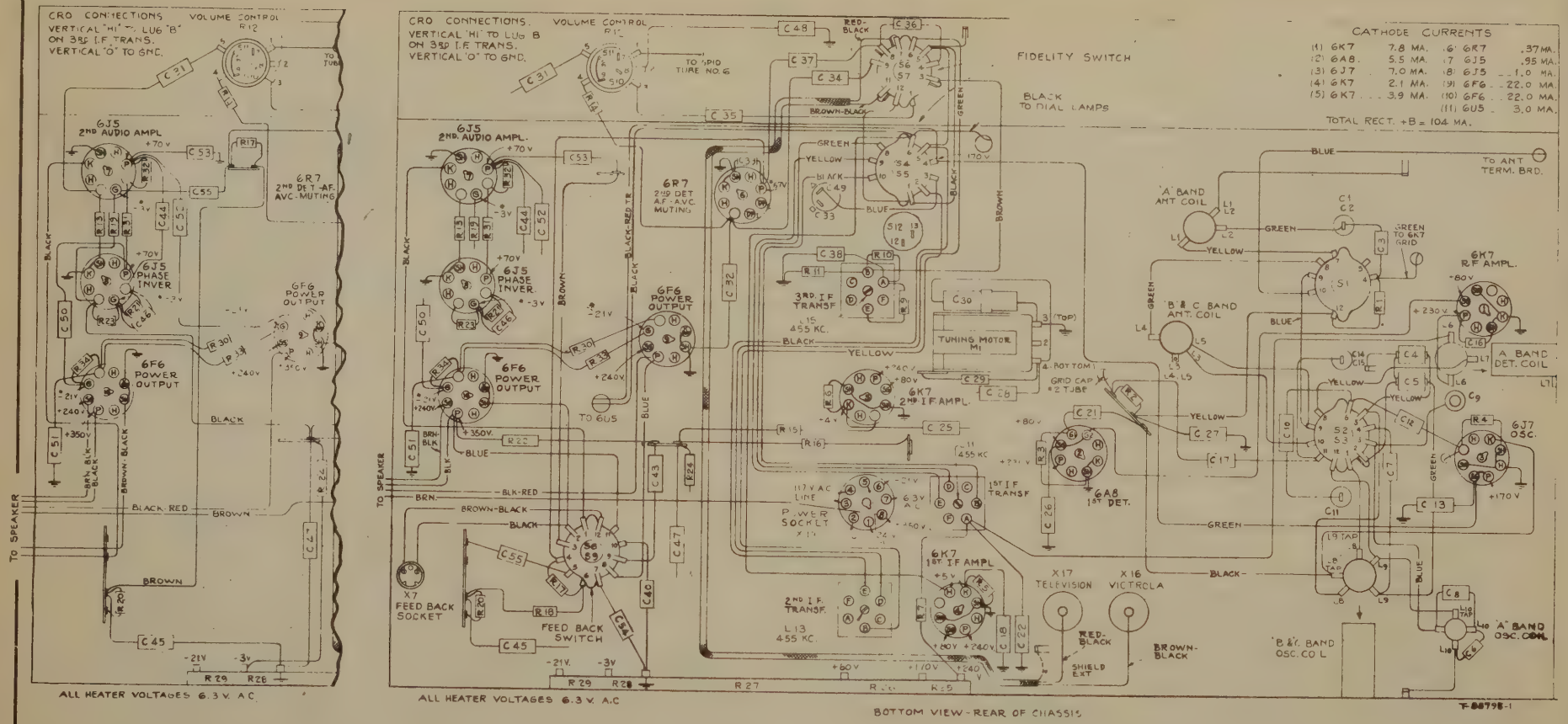



*Figure 25—Schematic Circuit Diagram, Radio Chassis*


CRO CONNECTIONS
VERTICAL "HI" TO LUG "B" ON 3RD I.F. TRANS.
VERTICAL "O" TO GND.
VOLUME CONTROL R12
6J5 2ND AUDIO AMPL
6R7 2ND DET-AF. AVC-MUTING
6J5 PHASE INVER
6F6 POWER OUTPUT
TO SPEAKER
ALL HEATER VOLTAGES 6.3 V. A.C
FIDELITY SWITCH
BLACK TO DIAL LAMPS
CATHODE CURRENTS
(1) 6K7 7.8 MA. (6) 6R7 .37 MA.
(2) 6A8 5.5 MA. (7) 6J5 .95 MA.
(3) 6J7 7.0 MA. (8) 6J5 1.0 MA.
(4) 6K7 2.1 MA. (9) 6F6 22.0 MA.
(5) 6K7 3.9 MA. (10) 6F6 22.0 MA.
(11) 6U5 3.0 MA.
TOTAL RECT. +B = 104 MA.
TO ANT TERM. BRD.
'A' BAND ANT COIL
'B & C BAND ANT. COIL
6K7 R.F AMPL.
A BAND DET. COIL
6J7 OSC.
3RD I.F. TRANSF
455 KC.
TUNING MOTOR M1
6K7 2ND I.F. AMPL.
6A8 1ST DET.
6K7 1ST I.F. AMPL
2ND I.F. TRANSF.
1ST I.F. TRANSF
117 V A.C. LINE POWER SOCKET
FEED BACK SOCKET
FEED BACK SWITCH
X17 TELEVISION
X16 VICTROLA
'A' BAND OSC. COIL
'B & C' BAND OSC. COIL
BOTTOM VIEW - REAR OF CHASSIS
F-88795-1

*TRK-9, TRK-12*

*Figure 26—Wiring Diagram (R-F and Switches) and Socket Voltages (Radio Chassis)*

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117 volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

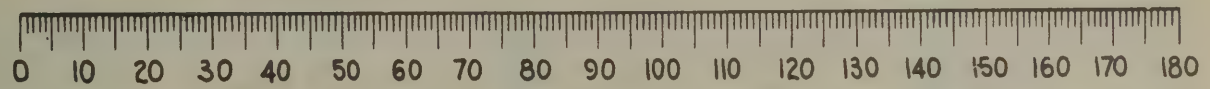
## Fidelity Switch (S4, S5, S6, S7)

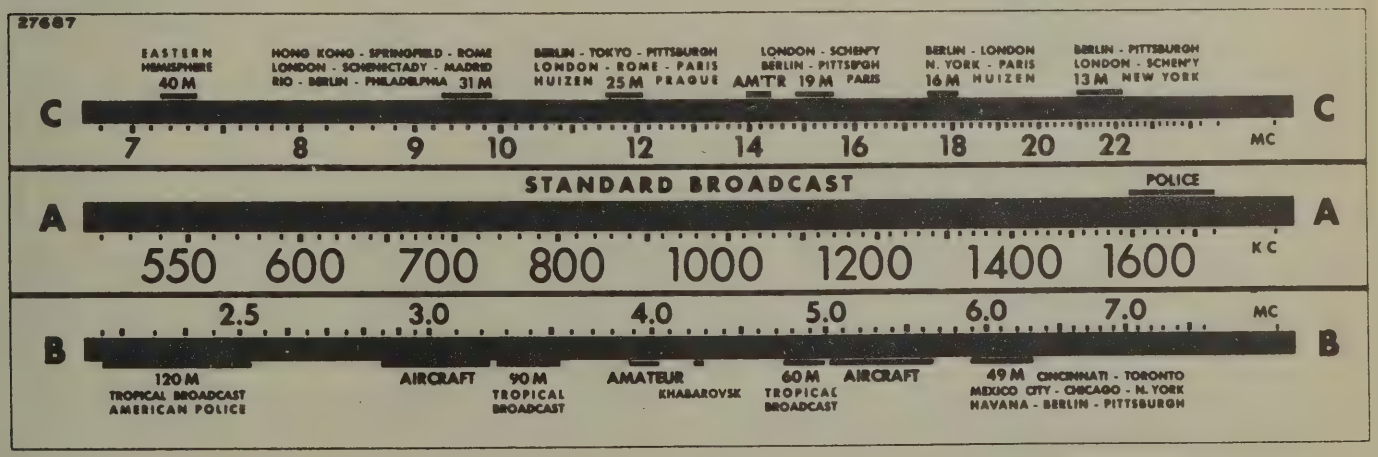
| Switch Position | For | I-F Amp. | Audio Amp. | 110-V. Supply for Tele. Chassis* | Osc. +B Supply | Dial Lamps** |
|---|---|---|---|---|---|---|
| No. 1 (Counter-clockwise) | Victrola | — | Min. Highs | Off | Off | On |
| No. 2 | Victrola | — | Max. Highs Reduced Lows | Off | Off | On |
| No. 3 | Victrola | — | Full Range | Off | Off | On |
| No. 1 | Radio | Sharp | Min. Highs Max. Lows | Off | On | On |
| No. 2 | Radio | Sharp | Max. Highs Reduced Lows | Off | On | On |
| No. 3 | Radio | Sharp | Max. Highs Full Lows | Off | On | On |
| No. 4 | Radio | Broad | Full Range | Off | On | On |
| No. 1 | Television | — | Min. Highs | On | Off | Off |
| No. 2 | Television | — | Med. Highs Reduced Lows | On | Off | Off |
| No. 3 | Television | — | Full Range | On | Off | Off |

* Controlled by switch (S12) on rear of fidelity switch.
** The 1st-I.F. heater is opened on television positions 1, 2 and 3.

*Figure 27—Functions of Fidelity Switch*

## Calibration Scale





27687
EASTERN HEMISPHERE 40 M
HONG KONG - SPRINGFIELD - ROME
LONDON - SCHENECTADY - MADRID
RIO - BERLIN - PHILADELPHIA 31 M
BERLIN - TOKYO - PITTSBURGH
LONDON - ROME - PARIS
HUIZEN 25 M PRAGUE
LONDON - SCHEN'Y
BERLIN - PITTSBURGH
AMTR 19 M PARIS
BERLIN - LONDON
N. YORK - PARIS
16 M HUIZEN
BERLIN - PITTSBURGH
LONDON - SCHEN'Y
13 M NEW YORK
C
7 8 9 10 12 14 16 18 20 22 MC
STANDARD BROADCAST
POLICE
A
550 600 700 800 1000 1200 1400 1600 KC
2.5 3.0 4.0 5.0 6.0 7.0 MC
B
120 M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90 M TROPICAL BROADCAST
AMATEUR KHABAROVSK
60 M TROPICAL BROADCAST
AIRCRAFT
49 M CINCINNATI - TORONTO MEXICO CITY - CHICAGO - N. YORK HAVANA - BERLIN - PITTSBURGH

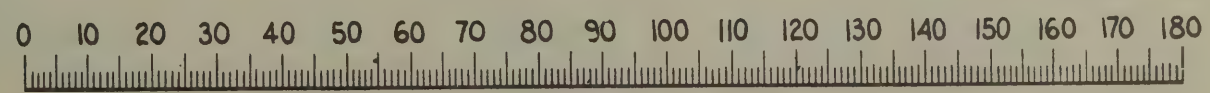



*Figure 28—Tuning Dial, and Corresponding 0-180° Calibration Scale*

The corresponding dial setting for any reading of the calibration scale can be determined by drawing a line straight up from this point; for example, 151° on the calibration scale corresponds to a dial reading of 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

# Alignment Procedure

## (RADIO CHASSIS)

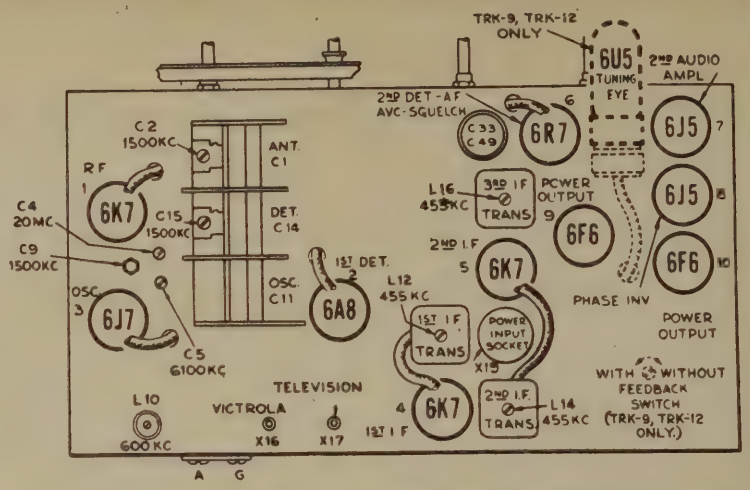



*Figure 29—At Right—Tube and Trimmer Locations*

**Cathode-Ray Alignment** is the preferable method. Connections for the oscilloscope are shown in the chassis drawing.

**Output Meter Alignment.** — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.** — For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "O" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with O-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "O" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator approximately 1/16-inch above end dots at low-frequency ends of bands with gang condenser fully meshed. See that pointer does not rub background screen or dial face. The indicator has a spring clip for attachment to the cable.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Set tuning gang to— | Adjust the following— | To obtain— |
|---|---|---|---|---|---|
| 1 | Turn fidelity switch to No. 3 radio (sharp). | | | | |
| 2 | 6K7 2nd I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point on "B" band | L15, L16 (3rd I-F Trans.) | Coincidental images on cathode-ray oscilloscope, or max. output on output meter |
| 3 | 6K7 1st I-F grid cap, in series with .01 mfd. | | | L13, L14 (2nd I-F Trans.) | |
| 4 | 6A8 1st Det. grid cap, in series with .01 mfd. | | | L11, L12 (1st I-F Trans.) | |
| 5 | Turn fidelity switch to No. 4 radio (broad). The curve on CRO should broaden out to a double peak and reduce gain nearly 50%. | | | | |
| 6 | Turn fidelity switch to No. 3 radio for the following adjustments. Back out the "B" and "C" oscillator trimmers, C5 and C4. Preset "A" band oscillator trimmer, C9, approximately an inch out. | | | | |
| 7 | Antenna terminal, in series with 100 mmf. | 600 kc | 600 kc (31°) "A" band | L10 (osc.) | Max. Output |
| 8 | | 1,500 kc | 1,500 kc (151°) "A" band | C9 (osc.) C2 (ant.) C15 (det.) | Max. Output |
| 9 | | 600 kc | 600 kc "A" band | L10 (osc.) | Rock in for Max. Output |
| 10 | Repeat Step No. 8. | | | | |
| 11 | Antenna terminal, in series with 300 ohms | 6,100 kc | 6,100 kc (140°) "B" band | C5 (osc.) | Max. Output* |
| 12 | | 20 mc | 20 mc (146°) "C" band | C4 (osc.) | Rock in for Max. Output* |
| | Follow "Adjustments for Electric Tuning." | | | | |

* Use minimum capacitance peak if two peaks can be obtained.
Note: The oscillator tracks 455 kc above the signal on all bands.

*Figure 30—Alignment Procedure*

# Miscellaneous Data for Radio Chassis

## Feedback Switch (S8 and S9)

### (TRK-9 and TRK-12 only)

| Counter-clockwise position (with feedback) | Clockwise position (without feedback) |
|---|---|
| 1. Provides inversed feedback by connecting part of secondary of output transformer in cathode of 6J5 2nd-audio tube. | 1. Removes reversed feedback and grounds cathode of 2nd-audio tube. |
| 2. Disconnects compensating network (R22, C43, C54, C40) from plate circuit of output tubes. | 2. Connects compensating network (R22, C43, C54, C40) to plate circuit of output tubes. |
| 3. Connects grid of 2nd audio to high side of 1st A-F plate resistor R17, for maximum input. | 3. Connects grid of 2nd audio to low side of 1st A-F plate resistor R17, for reduced input. |
| 4. Connects capacitor C53 (.005) from plate of 2nd audio to chassis. | 4. Disconnects C53 from plate of 2nd audio. |

*Figure 31—Functions of Feedback Switch (TRK-9 and TRK-12 only)*

## Precautionary Lead Dress

(1) All A-C leads should be twisted together and dressed away from parts in chassis to prevent hum pickup.

(2) Keep pilot light leads away from 6R7 grid.

(3) Yellow, green, and black leads from fidelity switch to 1st i-f transformer must be twisted together and dressed away from chassis.

(4) Yellow, green, and black leads from fidelity switch to 2nd i-f transformer must be twisted together and dressed away from chassis.

## Victrola Attachment

A jack (X-16) is located near the antenna terminal board for convenience in plugging in a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

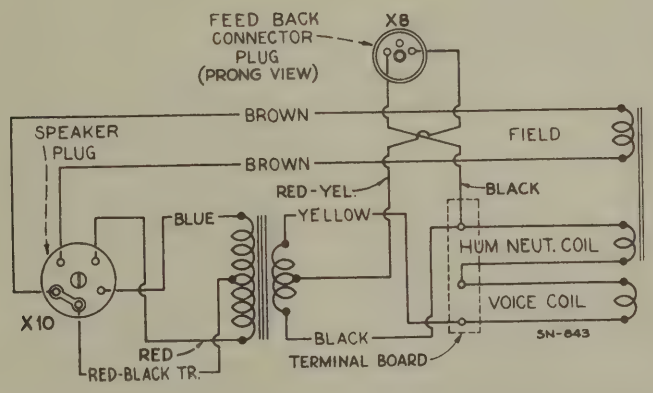



*Figure 32—Connections and Colors of Loudspeaker and Cable*

# TRK9, TRK90, TRK12, TRK120

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **TELEVISION CHASSIS ASSEMBLIES** |
| | KC-4A in TRK-9 (60 cycle) — KC-4H in TRK-90 (60 cycle) |
| | KC-4C in TRK-9 (50 cycle) — KC-4F in TRK-120 (60 cycle) |
| | KC-4 in TRK-12 (60 cycle) — KC-4J in TRK-120 (50 cycle) |
| | KC-4B in TRK-12 (50 cycle) |
| 33387 | Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment (Used with L11, L12, L14, L15) |
| 33835 | Adjuster—Magnetite core and stud in tube, for high frequency oscillator circuit adjustment (Used with L13) |
| 31253 | Board—4 terminal antenna-ground terminal board |
| 12884 | Capacitor—Adjustable plunger type air trimmer (C6) |
| 33097 | Capacitor—4.7 mmfd. (neg. temp. coeff.) (C69) |
| 33476 | Capacitor—8.2 mmfd., 500 volts (C8) |
| 33381 | Capacitor—8.2 mmfd. (neg. temp. coeff.) (C71) |
| 33380 | Capacitor—12 mmfd., 500 volts (C24) |
| 33100 | Capacitor—18 mmfd., 500 volts (neg. temp. coeff.) (C19, C23) |
| 14021 | Capacitor—22 mfd. (C50) |
| 33101 | Capacitor—22 mmfd. (neg. temp. coeff.) (C64) |
| 33102 | Capacitor—47 mmfd., (neg. temp. coeff.) (C30, C35, C66, C72) |
| 33103 | Capacitor—68 mmfd., 500 volts (C31, C36, C15, C25, C40, C44, C49) (neg. temp. coeff.) |
| 33477 | Capacitor—80.5 mmfd., 500 volts (C16) |
| 33104 | Capacitor—82 mmfd. (neg. temp. coeff.) (C21, C22) |
| 33106 | Capacitor—115 mmfd. (C5) |
| 33107 | Capacitor—135 mmfd. (C4) |
| 12725 | Capacitor—150 mmfd., 400 volts (C10, C87) |
| 33108 | Capacitor—190 mmfd. (C3) |
| 33760 | Capacitor—215 mmfd. (C137) |
| 12488 | Capacitor—270 mmfd. (C81) |
| 33109 | Capacitor—320 mmfd. (C2) |
| 31730 | Capacitor—820 mmfd. (C123) |
| 32788 | Capacitor—820 mmfd., 400 volts (C84, C89) |
| 12635 | Capacitor—1,000 mmfd., 400 volts (C90) |
| 4881 | Capacitor—3,300 mmfd., 400 volts (C102) |
| 34459 | Capacitor—.0025 mfd., 1,400 volts (C124) |
| 33584 | Capacitor—.005 mfd., 1,200 volts (C11, C12, C13, C14, C18, C20, C26, C27, C29, C32, C33, C34, C37, C38, C39, C41, C42, C43, C45, C46, C47, C48, C52, C60, C62, C63, C65, C67, C68, C70, C75, C98, C99, C100, C136) |
| 4937 | Capacitor—.01 mfd., 1,000 volts (C74) |
| 4870 | Capacitor—.025 mfd., 400 volts (C107) |
| 30882 | Capacitor—.05 mfd., 200 volts (C94, C95) |
| 32787 | Capacitor—.05 mfd., 400 volts (C28) |
| 4886 | Capacitor—.05 mfd., 400 volts (C91) |
| 4839 | Capacitor—0.1 mfd., 400 volts (C73, C53, C77, C78, C85, C59, C88, C103) |
| 12484 | Capacitor—0.25 mfd., 350 volts (C86, C93, C101, C106, C80, C76, C105) |
| 12741 | Capacitor—.5 mfd. (C57) |
| 32015 | Capacitor—1.0 mfd., 150 volts (C54) |
| 32145 | Capacitor—4 mfds., 450 volts (C117)—(Used in 50 cycle chassis only) |
| 33158 | Capacitor—10 mfd., 150 volts, 20 mfd., 25 volts (C97, C104) |
| 33159 | Capacitor—10 mfd., 350 volts; 10 mfd., 150 volts; 250 mfd., 15 volts (C56, C58, C61) |
| 33878 | Capacitor—10 mfd., 450 volts, 10 mfd., 450 volts, 10 mfd., 150 volts (C125, C126, C127) |
| 33160 | Capacitor—10 mfd., 350 volts, 10 mfd., 150 volts, 20 mfd., 25 volts, 20 mfd., 25 volts (C92, C79, C82, C83) |
| 32045 | Capacitor—15 mfd. (C96) |
| 33475 | Capacitor—20 mfd., 25 volts (C55) |
| 33161 | Capacitor—20-50 mfd., 35 volts (C51, C108) |
| 33243 | Coil—Oscillator coil with core and stud (L11) |
| 35582 | Coil—1½ turn antenna coil, core, stud, and capacitor assembly (C5, L9, L10) |
| 33647 | Coil—2 turn antenna coil, core, stud and capacitor assembly (C4, L7, L8) (yellow or purple) |
| 33646 | Coil—3 turn antenna coil, core, stud and capacitor assembly (C3, L5, L6) (orange or white) |
| 33645 | Coil—5½ turn antenna coil, core, stud and capacitor assembly (C2, L3, L4) (red or black) |
| 33644 | Coil—4 turn antenna coil, core, stud and capacitor assembly (C137, L1, L2) (brown or blue) |
| 33535 | Coil—Peaking coil (L39, R44) |
| 33534 | Coil—Peaking coil (L40, R48) |
| 33536 | Coil—Peaking coil (L41, R54) |
| 33537 | Coil—Peaking coil (L42, R56) |
| 35820 | Coil—Peaking coil (L51, R156) |
| 35821 | Coil—Peaking coil (L52, R146) |
| 35818 | Coil—Peaking coil (L53, R148) |
| 35817 | Coil—Peaking coil (L54, R150) |
| 35815 | Coil—Peaking coil (L55, R154) |
| 35819 | Coil—Peaking coil (L56, R153) |
| 35816 | Coil—Peaking coil (L57, R155) |
| 33228 | Condenser—Oscillator "Fine tuning" condenser, located on range switch (C9) |
| 33164 | Control—Dual 1.2 meg. and 30,000 ohms "Vertical hold" and "Horizontal hold" controls (R106, R92) |
| 33206 | Control—6 ohm tapped "Horizontal centering" control (R98) |
| 33210 | Control—20 ohm tapped "Vertical centering" control (R114) |
| 33162 | Control—4,000 ohm, "Contrast" control (R45) |
| 33209 | Control—5,600 ohm, "Vertical linearity" control (R113) |
| 33163 | Control—50,000 ohm, "Brightness" control (R61) |
| 35566 | Control—50,000 ohm "Brightness" and 4,000 ohm "Contrast" dual control (R61, R45) |
| 33207 | Control—560,000 ohm "Width" control (R94) |
| 33208 | Control—2.7 meg. "Height" control (R108) |
| 33002 | Coupling—Flexible bronze coupling, located on control shaft end of "Contrast" control |
| 33383 | Coupling—Flexible bronze coupling, located on panel shaft end of "Contrast" control |
| 4574 | Plug—6-prong male plug for Television chassis power supply cable (X14) |
| 16836 | Plug—8-prong male plug for Television chassis power supply cable (X12) |
| 32723 | Resistor—10 ohms, 1 watt (R120) |
| 14671 | Resistor—33 ohms, ½ watt (R152) |
| 35568 | Resistor—Voltage divider comprising a 70, 7.4 and 5 ohm section (R164, R163, R162) |
| 33326 | Resistor—Voltage divider comprising a 600-300-3,100-5,455 and 13,000 ohm section (R125, R124, R123, R122, R121) |
| 14074 | Resistor—82 ohms, ¼ watt (R64, R67, R14, R21, R28, R34) |
| 14439 | Resistor—100 ohms, ¼ watt (R53) |
| 13428 | Resistor—150 ohms, ¼ watt (R39) |
| 13454 | Resistor—270 ohms, ¼ watt (R141) |
| 13219 | Resistor—270 ohms, 2 watts (R97) |
| 30499 | Resistor—470 ohms, ½ watt (R95) |
| 35567 | Resistor—Voltage divider comprising a 900-3,100-6,600-7,800 and 1,470 ohm section (R161, R160, R159, R158, R157) |
| 33325 | Resistor—Voltage divider comprising a 36-100-7.4 and 5 ohm section (R119, R118, R117, R116) |
| 14720 | Resistor—1,000 ohms, ¼ watt (R9, R65, R70, R18, R41, R25, R31, R37, R42) |
| 14993 | Resistor—1,200 ohms, 1 10 watt (R17) |
| 12267 | Resistor—1,200 ohms, ¼ watt (R115) |
| 14499 | Resistor—1,500 ohms, ¼ watt (R8, R24) |
| 31920 | Resistor—1,800 ohms, 1 10 watt (R16, R23, R30) |
| 12194 | Resistor—1,800 ohms, ½ watt (R112) |
| 11863 | Resistor—2,200 ohms, 1 10 watt (R36) |
| 13486 | Resistor—2,200 ohms, 1 watt (R6) |
| 13031 | Resistor—3,300 ohms, 1 10 watt (R19, R26) |
| 12312 | Resistor—3,300 ohms, ¼ watt (R87) |
| 30150 | Resistor—3,300 ohms, 1 watt (R7, R57) |
| 12955 | Resistor—3,900 ohms, ¼ watt (R109) |
| 35943 | Resistor—3,900 ohms, ½ watt (R139) |
| 30146 | Resistor—4,700 ohms, ¼ watt (R83, R99) |
| 31789 | Resistor—5,600 ohms, 1 10 watt (R12, R142, R143) |
| 12265 | Resistor—6,800 ohms, ¼ watt (R11, R140) |
| 14075 | Resistor—8,200 ohms, ¼ watt (R101, R102, R103) |
| 14559 | Resistor—10,000 ohms, ¼ watt (R20, R27, R33, R13, R58, R82, R84, R88, R100, R74, R147) |
| 13097 | Resistor—10,000 ohms, 1 watt (R79, R80) |
| 13594 | Resistor—15,000 ohms, 1/10 watt (R43) |
| 35944 | Resistor—15,000 ohms, ½ watt (R149) |
| 36714 | Resistor—15,000 ohms, ½ watt (R176) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R71) |
| 13998 | Resistor—22,000 ohms, ¼ watt (R47, R49) |
| 12738 | Resistor—27,000 ohms, ¼ watt (R91) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R10) |
| 35945 | Resistor—33,000 ohms, ½ watt (R5, R138) |
| 12412 | Resistor—47,000 ohms, ¼ watt (R93) |
| 30650 | Resistor—56,000 ohms, ½ watt (R55) |
| 12010 | Resistor—68,000 ohms, 1/10 watt (R69) |
| 13715 | Resistor—68,000 ohms, ½ watt (R63, R66) |
| 14138 | Resistor—68,000 ohms, ¼ watt (R15, R22, R29, R35, R40, R68) |
| 14023 | Resistor—82,000 ohms, ¼ watt (R78) |
| 30435 | Resistor—82,000 ohms, 1 watt (R144) |
| 14560 | Resistor—100,000 ohms, ¼ watt (R72, R85, R86, R89, R104, R145) (R51—TRK-9, TRK-12 without AVC; TRK-90, TRK-120) |
| 30180 | Resistor—120,000 ohms, ½ watt (R4) |
| 12264 | Resistor—220,000 ohms, ¼ watt (R51—TRK-9, TRK-12 with AVC) (R111) |
| 12285 | Resistor—470,000 ohms, ¼ watt (R46, R59, R96) |
| 12486 | Resistor—560,000 ohms, ¼ watt (R151) |
| 12413 | Resistor—680,000 ohms, ¼ watt (R50) |
| 13730 | Resistor—1 meg., ¼ watt (R1, R2, R76, R75, R73, R52, R60, R81) |
| 2546 | Resistor—1 meg., 1 watt (R3) |
| 30208 | Resistor—1.2 meg., ¼ watt (R105) |
| 30162 | Resistor—1.2 meg., ½ watt (R107) |
| 12679 | Resistor—2.2 meg., ¼ watt (R110) |
| 33229 | Roller—Rubber friction roller for oscillator condenser drive. Part of range switch assembly |
| 33165 | Socket—2-prong female socket for Video output to Kinescope (X3) |

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 33011 | Socket—4-contact female socket for Kinescope deflecting yoke (X1) |
| 31251 | Socket—8-contact octal type socket |
| 18007 | Socket—Ceramic octal socket for 6L6 "Hor. out" and 6J5 "Osc." |
| 14278 | Socket—Television audio output pin socket (X5) |
| 33227 | Switch—Range switch with shield plate and mounting studs—less coils, condenser and friction roller (S1, S2, S3) |
| 33330 | Transformer—"1st det. P1" I-F transformer (L17, L18) (br. and br.) |
| 33331 | Transformer—"1st det. P2" I-F transformer (L19, L20) (brown and red) |
| 33334 | Transformer—"1st pix P1" I-F transformer (L21, L22, L23, L24) (brown and green) |
| 33335 | Transformer—"1st pix P2" (L25) or "2nd pix P2" (L30) I-F transformer (brown and blue) |
| 33338 | Transformer—"1st sound" I-F transformer (L45, L46) (orange and red) (Used in early production) |
| 33526 | Transformer—"1st sound" I-F transformer (L45, L46) (red and white) (Used in late production) |
| 33516 | Transformer—"2nd pix P1" I-F transformer (L26, L27, L28, L29) (orange and orange) |
| 33339 | Transformer—"2nd sound" I-F transformer (L47, L48) (orange and orange) |
| 33333 | Transformer—"3rd pix" I-F transformer (L31, L32, L33) (orange and blue) |
| 33336 | Transformer—"4th pix" I-F transformer (L34, L35, L36) (brown and black) |
| 33337 | Transformer—"5th pix" I-F transformer (L37, L38) (brown and white) |
| 32899 | Transformer—Horizontal oscillation transformer (T1) |
| 9862 | Transformer—Horizontal output transformer (T2) |
| 32900 | Transformer—Vertical output transformer (T4) |
| 32898 | Transformer—Vertical oscillation transformer (T3) |

### 3-BAND RADIO RECEIVER CHASSIS

RC-427A in TRK-9 — RC-427G in TRK-90
RC-427 in TRK-12 — RC-427F in TRK-120

| | |
|---|---|
| 31863 | Board—Antenna-ground terminal board |
| 32232 | Body—Station setting contact body and spring |
| 32090 | Bracket—Motor mounting bracket |
| 31282 | Bracket—"Magic Eye" mounting bracket and clip (TRK-9 and TRK-12 only) |
| 32635 | Cable—Indicator pointer drive cable — 60-in. length |
| 30766 | Cap—"Magic Eye" cap (TRK-9, TRK-12 only) |
| 14392 | Capacitor—4.7 mmfd. (C46) |
| 31353 | Capacitor—15 mmfd. (C6) |
| 31270 | Capacitor—100 mmfd. (C41, C42) |
| 12720 | Capacitor—100 mmfd. (C38, C16) |
| 12724 | Capacitor—120 mmfd. (C12, C21) |
| 13003 | Capacitor—180 mmfd. (C3, C17) |
| 12952 | Capacitor—330 mmfd. (C39) |
| 31433 | Capacitor—560 mmfd. (C8) |
| 31552 | Capacitor—680 mmfd., (C19, C20, C23, C24) |
| 32197 | Capacitor—3,900 mmfd., 500 volts (C7) |
| 31405 | Capacitor—6,000 mmfd., 500 volts (C10) |
| 5107 | Capacitor—.0025 mfd., 700 volts (C35, C36, C55) |
| 30303 | Capacitor—.0035 mfd., 700 volts (C40, C54) |
| 33584 | Capacitor—.005 mfd., 1,200 volts (C53) |
| 4937 | Capacitor—.01 mfd., 1,000 volts (C37, C44, C43, C29) |
| 11315 | Capacitor—.015 mfd., 400 volts (C31) |
| 4870 | Capacitor—.025 mfd., 400 volts (C32, C50) |
| 32787 | Capacitor—.05 mfd., 400 volts (C27, C25) |
| 4839 | Capacitor—0.1 mfd., 400 volts (C22, C18, C26, C34, C52) |
| 12484 | Capacitor—.25 mfd., 350 volts (C13, C28, C48, C45, C51) |
| 12741 | Capacitor—0.5 mfd., 150 volts (C47) |
| 18530 | Capacitor—20-20 mfd., 350 volts (C33, C49) |
| 32088 | Capacitor—Motor capacitor 60 mfd., 40 volts (C30) |
| 31263 | Coil—"A" band antenna coil (L1, L2) |
| 31265 | Coil—"A" band detector coil (L6, L7) |
| 31296 | Coil—"A" band oscillator coil (L10) |
| 31980 | Coil—"B" and "C" band antenna coil (L3, L4, L5) |
| 31783 | Coil—"B" and "C" band oscillator coil (L8, L9) |
| 31234 | Condenser—3-gang variable condenser (C1, C11, C14, C2, C15) |
| 12714 | Condenser—Air trimmer condenser (C9) |
| 31292 | Condenser—Double section trimmer capacitor 3-30 mmfd., each section (C4, C5) |
| 31971 | Contact—Push button switch contacts comprising 11 contacts riveted on insulating strip |
| 31972 | Contact—Push button switch contacts comprising 14 contacts riveted on insulating strip |
| 31231 | Contact—Station setting contact tip |
| 33446 | Control "Power-volume control" — 1½ meg. (R12, S10, S11) |
| 32634 | Cord—Band indicator and variable condenser drive cord |
| 31269 | Core—Core and stud for 1st, 2nd, or 3rd I-F transformer |
| 32093 | Damper—Flywheel for rear end of motor shaft |
| 32096 | Disc—Friction disc and pinion gear |
| 32091 | Drive—Friction drive gear assembly |
| 31273 | Drum—Variable condenser drive drum |
| 31239 | Gear—Knob shaft drive gear and hub |
| 31532 | Indicator—Band indicating strip (Model TRK-12 and TRK-120) |
| 31304 | Indicator—Band indicating strip (Model TRK-9 and TRK-90) |
| 31480 | Lamp—6.3 volt electric tuning set-up lamp Mazda No. 47 |
| 11891 | Lamp—6.3 volt dial lamp Mazda No. 44 |
| 31969 | Lockplate—Push button switch lockplate comprising 10 contact locks in 1 strip |
| 32095 | Motor—Electric tuning drive motor complete (M1) |
| 31228 | Plate—Station selector contact plate — less plungers |
| 31227 | Plate—Station selector mounting plate—mounts on rear of variable condenser |
| 12493 | Plug—Female connector for speaker cable (X9) |
| 31271 | Pulley—Drive pulley fastens on station selector knob shaft |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 31272 | Pulley—Range switch pulley |
| 14720 | Resistor—1,000 ohms, ½ watt (R7) |
| 12267 | Resistor—1,200 ohms, ½ watt (R6) |
| 12312 | Resistor—3,300 ohms, ½ watt (R5) |
| 14559 | Resistor—10,000 ohms, ½ watt (R10) |
| 12695 | Resistor—15,000 ohms, ½ watt (R14) |
| 12738 | Resistor—27,000 ohms, ½ watt (R13) |
| 13477 | Resistor—27,000 ohms, 1 watt (R22) |
| 12454 | Resistor—33,000 ohms, ½ watt (R3, R4) |
| 12266 | Resistor—39,000 ohms, ½ watt (R23) |
| 12412 | Resistor—47,000 ohms, ½ watt (R18) |
| 12286 | Resistor—56,000 ohms, ½ watt (R30) |
| 14560 | Resistor—100,000 ohms, ½ watt (R11, R16, R20, R32, R31) |
| 14020 | Resistor—150,000 ohms, ½ watt (R17—TRK-9 and TRK-12 only) |
| 13698 | Resistor—180,000 ohms, ½ watt (R17—TRK-90 and TRK-120 only) |
| 12199 | Resistor—270,000 ohms, ½ watt (R15, R33, R34) |
| 18020 | Resistor—470,000 ohms, 1 watt (R24) |
| 12486 | Resistor—560,000 ohms, ½ watt (R21) |
| 12013 | Resistor—1 meg., 1/10 watt (R8) |
| 13730 | Resistor—1 meg., ½ watt (R1, R2, R19) |
| 12679 | Resistor—2.2 meg., ½ watt (R9) |
| 31548 | Resistor—Voltage divider consisting of one 1,500, one 2,950, one 3,400, one 30 and one 3,165 ohm section (R25, R26, R27, R28, R29) |
| 14887 | Retainer—Drive cord pulley retainer |
| 32086 | Roller—Rubber friction roller for front end of motor shaft |
| 31233 | Rotor—Station selector rotor disc—mounts on rear of variable condenser shaft |
| 5042 | Screw—No. 8-32 set screw for drive pulley |
| 14350 | Screw—No. 8-32 square head set screw for rotor disc, Stock No. 31233 |
| 31681 | Shaft—Dial drive knob shaft |
| 31364 | Socket—Dial or electric tuning set-up lamp socket |
| 13871 | Socket—"Magic Eye" socket (TRK-9 and TRK-12 only) |
| 31251 | Socket—Octal type Radiotron or power supply socket |
| 14278 | Socket—Pin socket for phono or television input with mounting plate (X16) (X17) |
| 31279 | Spring—Band indicator tension spring |
| 13638 | Spring—Indicator drive cord tension spring |
| 31970 | Spring—Push button switch lock bar spring |
| 31232 | Spring—Station setting tip spring |
| 12007 | Spring—Stud retaining spring for I-F adjuster |
| 31418 | Spring—Variable condenser drive cord tension spring |
| 33448 | Switch—Feed-back switch (S8, S9) |
| 33447 | Switch—H. F. tone control phono-radio-television and power switch (S4, S5, S6, S7, S12) |
| 31979 | Switch—Range switch (S1, S2, S3) |
| 31968 | Switch—Station selector push button switch complete |
| 31565 | Transformer—1st I-F transformer complete (L11, L12, C19, C20, L19) |
| 31551 | Transformer—2nd I-F transformer complete (L13, L14, C23, C24, L20) |
| 31549 | Transformer—3rd I-F transformer complete (L15, L16, C41, C42) |
| 32231 | Washers—Comprising one metal washer, two fibre washers and one solder lug or retainer for station setting body |
| 32094 | Washers—Assorted washers for mounting damper on motor shaft |

### POWER SUPPLY UNIT
### TELEVISION AUDIO RECEIVER
### RS-83E

| | |
|---|---|
| 14531 | Capacitor—25 mfd. filter capacitor (C1) |
| 33606 | Plug—8-contact male plug for power supply cable (X20) |
| 31251 | Socket—5U4G Radiotron tube socket |
| 33445 | Transformer—110 V. 50-60 cycle power transformer (T1) |

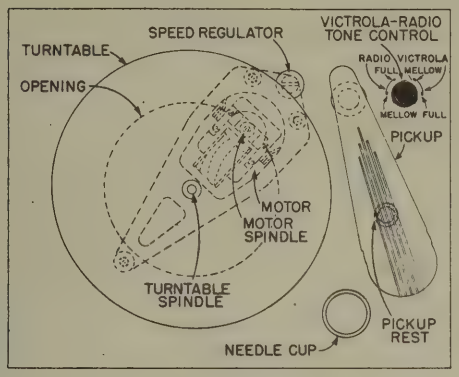
## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| | **7,500 VOLT TELEVISION POWER UNIT** |
| | KK-7A in TRK-9 (60 cycle) — KK-7H in TRK-90 (60 cycle) |
| | KK-7E in TRK-9 (50 cycle) — KK-7F in TRK-120 (60 cycle) |
| | KK-7 in TRK-12 (60 cycle) — KK-7J in TRK-120 (50 cycle) |
| | KK-7D in TRK-12 (50 cycle) |
| 33016 | Bushing—Porcelain bushing and spring |
| 33288 | Cable—Insulated connector complete with cable for Kinescope (2nd anode) |
| 33018 | Capacitor—0.03 mfd., 7,500 volt (C113, C114) |
| 34331 | Capacitor—0.1 mfd., 7,500 volt (C121, C122) (Used in 50 cycle model only) |
| 18388 | Capacitor—0.25 mfd., 600 volt (C120, C128) |
| 32400 | Capacitor—20 mfd., 450 volt (C111, C112) |
| 33023 | Capacitor—80-10 mfd., 400 volt (C110, C109; C118, C119) |
| 14854 | Choke—Filter choke (L49) |
| 32940 | Choke—Filter choke (L50) (Used in TRK-9, TRK-12, TRK-120, 50 cycle) |
| 35887 | Choke—Filter choke (L50) (Used in TRK-90 and TRK-120, 60 cycle only) |
| 30314 | Clip—Plate connector for 2V3G Radiotron |
| 33037 | Control—Focus control, 400,000 ohms (R129) (Used in first production TRK-9, TRK-12, and in TRK-90) |
| 33971 | Control—Focus control, 400,000 ohms (R129) (Used in second production TRK-9, TRK-12, and in TRK-120) |
| 33002 | Coupling—Flexible bronze coupling |
| 10907 | Fuse—3 ampere, 250 volt |
| 34527 | Fuse—$\frac{3}{4}$ ampere glass type fuse |
| 33015 | Insulator—Stand-off insulator only—less hardware |
| 32937 | Knob—Focus control knob |
| 33244 | Plug—2-prong male connector for A.C. power cord (X22) |
| 33166 | Plug—2-prong male plug for Kinescope grid-cathode cable (X4) |
| 35897 | Resistor—60 ohms, 10 watt (R165) |
| 33501 | Resistor—330,000 ohms, 1W (1,000V.) (R126, R130) |
| 33502 | Resistor—470,000 ohms, 1W (1,000V.) (R127, R137, R166) (R128 in TRK-9, TRK-12, TRK-90, and TRK-120 with D.C. Restorer) |
| 33593 | Resistor—560,000 ohms, 1 watt (1,000V.) (R128 in TRK-90 and TRK-120 without D.C. Restorer) |
| 33554 | Resistor—820,000 ohms, 1W (1,000V.) (R131, R132, R133, R134, R135, R136) |
| 33024 | Shaft—Bakelite shaft for focus control |
| 18007 | Socket—Ceramic octal base socket and retaining ring for high voltage rectifier |
| 33245 | Socket—Kinescope socket, less cable (X11) |
| 31251 | Socket—Octal base 5T4 or 5U4G rectifier, or television power supply socket (X13) |
| 12143 | Socket—6-prong television power supply socket (X15) |
| 32909 | Support—Rectifier socket, plate, and stand-off insulator assembly |
| 32939 | Transformer—Filament power transformer (T7), 105-125 volts, 50-60 cycle |
| 32938 | Transformer—Low voltage power transformer (T5), 105-125 volt, 60 cycle (Used in 60 cycle models only) |
| 34302 | Transformer—Low voltage power transformer (T8), 105-125 volts, 50 cycle (Used in 50 cycle models only) |
| 9861 | Transformer—High voltage power transformer (T6), 105-125 volts, 60 cycle (Used in 60 cycle models only) |
| 34526 | Transformer—High voltage power transformer (T9), 105-125 volts, 50 cycle (Used in TRK-9, 50 cycle and TRK-12, 50 cycle only) |
| 35888 | Transformer—High voltage power transformer (T9), 105-125 volts, 50 cycle (Used in TRK-120, 50 cycle only) |
| | **SPEAKER ASSEMBLY RL-70F-5** |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L21) |
| 11234 | Coil—Speaker field coil (L17) |
| 31275 | Cone—Speaker cone assembly (L18) |
| 31567 | Plug—3-prong male feed back cable plug (X8) |
| 31539 | Plug—5-prong speaker plug (X10) |
| 31556 | Speaker—Speaker complete (RL-70F-5) |
| 31557 | Transformer—Speaker output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31358 | Button—Station selector push button |
| 33676 | Cable—17$\frac{1}{2}$-inch shielded audio lead with plugs (X6, X18) (Model TRK-9 and TRK-90 only) |
| 33480 | Cable—38-inch shielded audio lead with plugs (Model TRK-12 and TRK-120 only) (X6, X18) |
| 34600 | Cable—Kinescope cable and socket (TRK-12 and TRK-120 only) |
| 34601 | Cable—Kinescope cable and socket (TRK-9 and TRK-90 only) |
| 33246 | Cable—Low capacity Kinescope grid cable (TRK-12 and TRK-120 only) |
| 33605 | Cable—Low capacity Kinescope grid cable (TRK-9 and TRK-90 only) |
| 39872 | Cable—Television power supply cable |
| 33597 | Cap—Blue pilot lamp "Bulls Eye" |
| 32897 | Clamp—Deflecting yoke clamp assembly |
| 4573 | Connector—2-prong female connector for power supply circuit (X23) |
| 33363 | Connector—2-prong female connector, used on interlock cable (X21) |
| 33002 | Coupling—Flexible bronze coupling |
| 31456 | Cover—Eight protective covers for push button markers |
| 32815 | Cushion—Kinescope masking cushion (TRK-12 and TRK-120 only) |
| 33019 | Cushion—Kinescope masking cushion (TRK-9 and TRK-90 only) |
| 33643 | Cushion—Television chassis mounting cushion with screw, spacer and washer (sufficient for one chassis) |
| 35894 | Decalcomania—"1-2-3-4-5" decal (TRK-12 and TRK-120) |
| 38305 | Decalcomania—"1-2-3-4-5" decal (TRK-9 and TRK-90) |
| 35890 | Decalcomania—"Contrast-Brightness" decal |
| 35893 | Decalcomania—"Fine Tuning" decal |
| 35891 | Decalcomania—"Horizontal and Vertical Holding" decal |
| 35896 | Decalcomania—"Power-Volume, tone, tuning, range" decal |
| 35392 | Decalcomania—"RCA Victor" decal |
| 35892 | Decalcomania—"Station selector" decal |
| 35895 | Decalcomania—"Victrola-Radio-Television" decal |
| 33442 | Dial—Three-band glass dial scale |
| 33329 | Escutcheon—Dial escutcheon less buttons, button shaft and dial scale (TRK-9 and TRK-12) |
| 35889 | Escutcheon—Dial escutcheon less buttons, button shaft and dial scale (TRK-90 and TRK-120) |
| 32083 | Frame—Dial frame with screen less pointer, carriage and rod |
| 33071 | Glass 6$\frac{7}{8}$ by 8$\frac{3}{8}$ inch safety protective glass (TRK-9 and TRK-90 only) |
| 33076 | Glass—8$\frac{3}{8}$ by 11$\frac{1}{8}$ inch safety protective glass (TRK-12 and TRK-120 only) |
| 33282 | Hinge—Piano type lid hinge and screws |
| 33468 | Knob—Radio tuning, volume or range selector knob |
| 33470 | Knob—Television "Contrast," "Hor. hold" or "Fine Tuning" knob |
| 33471 | Knob—Television "Brightness" or "Vert. hold" knob |
| 33472 | Knob—Television "Station selector" knob |
| 33469 | Knob—"Victrola-Radio-Television-Fidelity selection" knob |
| 11891 | Lamp—6.3 V. pilot lamp, Mazda No. 44 |
| 31589 | Marker—Complete set of call letter markers |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31457 | Marker—"Victrola" push button marker |
| 33075 | Mirror—20$\frac{1}{2}$ by 14$\frac{1}{2}$ in. viewing mirror |
| 33225 | Nut—Speed nut for mounting high frequency coil assemblies |
| 4577 | Plug—2-prong male plug for power supply circuit (X24) |
| 33244 | Plug—2-prong male plug, used on interlock cable (X22) |
| 33166 | Plug—2-prong male plug for Kinescope grid-cathode cable (X4) |
| 32816 | Plug—4-prong male plug for deflecting yoke cable (X2) |
| 12493 | Plug—5-prong female speaker cable plug (X9) |
| 4574 | Plug—6-prong male plug for Television chassis power supply cable (X14) |
| 16836 | Plug—8-prong male plug for Television chassis power supply cable (X12) |
| 31542 | Pointer—Station selector pointer with carriage |
| 31287 | Rod—Dial frame pointer slide rod |
| 31306 | Screen—Dial frame diffusing screen with rivets |
| 4560 | Screw—$\frac{1}{4}$-20 by 1$\frac{1}{4}$ in. long, machine screw, washer and lockwasher for chassis mounting (12 required) |
| 35032 | Shaft—Push button pivot shaft |
| 33517 | Sleeve—Bell mouth sleeve for screw-driver adjustments (TRK-9 and TRK-90 only) |
| 14270 | Spring—Knob spring for Stock Nos. 33468, 33471, 33472, 33469 knobs |
| 30330 | Spring—Knob spring for Stock Nos. 33470, knob |
| 33362 | Switch—Interlock switch with leads (TRK-9 and TRK-12) |
| 33384 | Switch—Interlock switch and cover (TRK-90 and TRK-120) |
| 31522 | Support—Left hand lid support |
| 31478 | Support—Right hand lid support |
| 9857 | Yoke—Deflecting yoke complete with cable and 4-prong plug (L43, L44, R62) |

# MODEL U-9

## Chassis No. RC-482B & RC-482C

## Five-Tube, Single-Band, A-C, Superheterodyne




*At Left—*
*Top View of Motorboard*

*At Right—*
*Model U-9*

## Electrical and Mechanical Specifications

FREQUENCY RANGE

Standard Broadcast and one Police Band..... 540-1,720 kc
INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7..... 1st Detector—Oscillator
(2) RCA-12SK7..... I-F Amplifier
(3) RCA-12SQ7..... 2nd Detector, A.V.C., A.F.
(4) RCA-50L6GT..... Power Output
(5) RCA-35Z5GT..... Rectifier
PILOT LAMP (1)..... Mazda No. 51, 7.5 volts, 0.2 amp.

LOUDSPEAKER (84843-1 or RL81-2)

Type..... 5-inch P M Dynamic
Voice Coil Impedance..... (84843-1).... 3.4 ohms at 400 cycles; (RL81-2)... 4.5 ohms at 400 cycles

LOUDSPEAKER (RL-81-A3)

Type..... 5-inch P M Dynamic
Voice Coil Impedance..... 4.0 ohms at 400 cycles

PHONO MECHANISM..... Self-starting motor, Edge-driven turntable, Adjustable Speed

PICKUP..... Crystal
Pickup Impedance..... 0.1 meg. at 1,000 cycles

POWER OUTPUT RATING

Undistorted..... 0.71 watts
Maximum..... 1.36 watts

POWER SUPPLY RATINGS

A-6..... 105-125 volts, 60 cycles
A-5..... 105-125 volts, 50 cycles
POWER CONSUMPTION..... 55 watts

## Miscellaneous Service Data

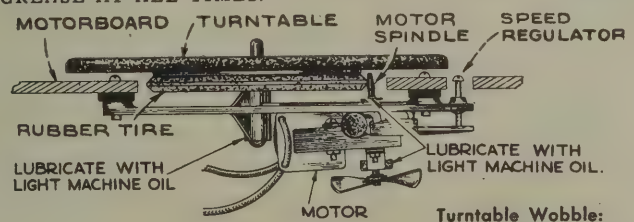
PHONOGRAPH MECHANISM.—

**The phonograph motor** is self-starting and operates the turntable through friction drive between the motor spindle and the rubber tire on the underside of the turntable.

**The rubber driving tire** on the turntable should never be removed since it is ground in to be concentric with the spindle. If replacement is required, the entire turntable should be replaced.

**The speed regulator** raises and lowers the motor. This changes the driving ratio between the motor and the turntable due to the motor spindle being conical in shape. It is important to adjust this regulator for a turntable speed of 78 r.p.m. WHILE PLAYING A 10-INCH RECORD WITH THE NEEDLE APPROXIMATELY ONE INCH FROM THE OUTER EDGE OF THE RECORD.

**Lubrication.**—The motor should be lubricated as follows: Place a few drops of S.A.E. 20 (or equivalent) on the turntable spindle and saturate the oil retaining felt pads on the motor shaft with S.A.E. 10 oil. This oiling process should be repeated once or twice a year. CAUTION.—THE MOTOR DRIVE SPINDLE AND RUBBER DRIVING TIRE ON THE TURNTABLE MUST BE KEPT CLEAN AND ENTIRELY FREE FROM OIL AND GREASE AT ALL TIMES.




### Turntable Assembly Stock No. 33899:

The turntable and tire assembly Stock No. 33899 is superseded by:

Stock No. 37971—Turntable and spindle, less tire
Stock No. 37872—Tire only

### Turntable Wobble:

Turntables (Stock No. 33899) found to have excessive wobble (vertical run-out) may be trued-up in the following manner:

(a) Obtain a motor bearing, Stock No. 31046 (used in R93-B) and clamp same securely in a vise.
(b) Place turntable spindle in this bearing and make sure that turntable spins freely.
(c) With turntable spinning, the high side can readily be determined by use of a piece of chalk carefully lowered so that it just touches the high spot of the turntable, leaving a mark.
(d) With both hands grasp the rim of the turntable, thumbs on top and index fingers underneath turntable at the center of the chalk mark.
(e) Apply a moderate amount of pressure in a downward direction at right angle to the jaws of the vise.
(f) Spin turntable again and if still running out, repeat operation mentioned under (c), continuing by trial until turntable runs true.

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

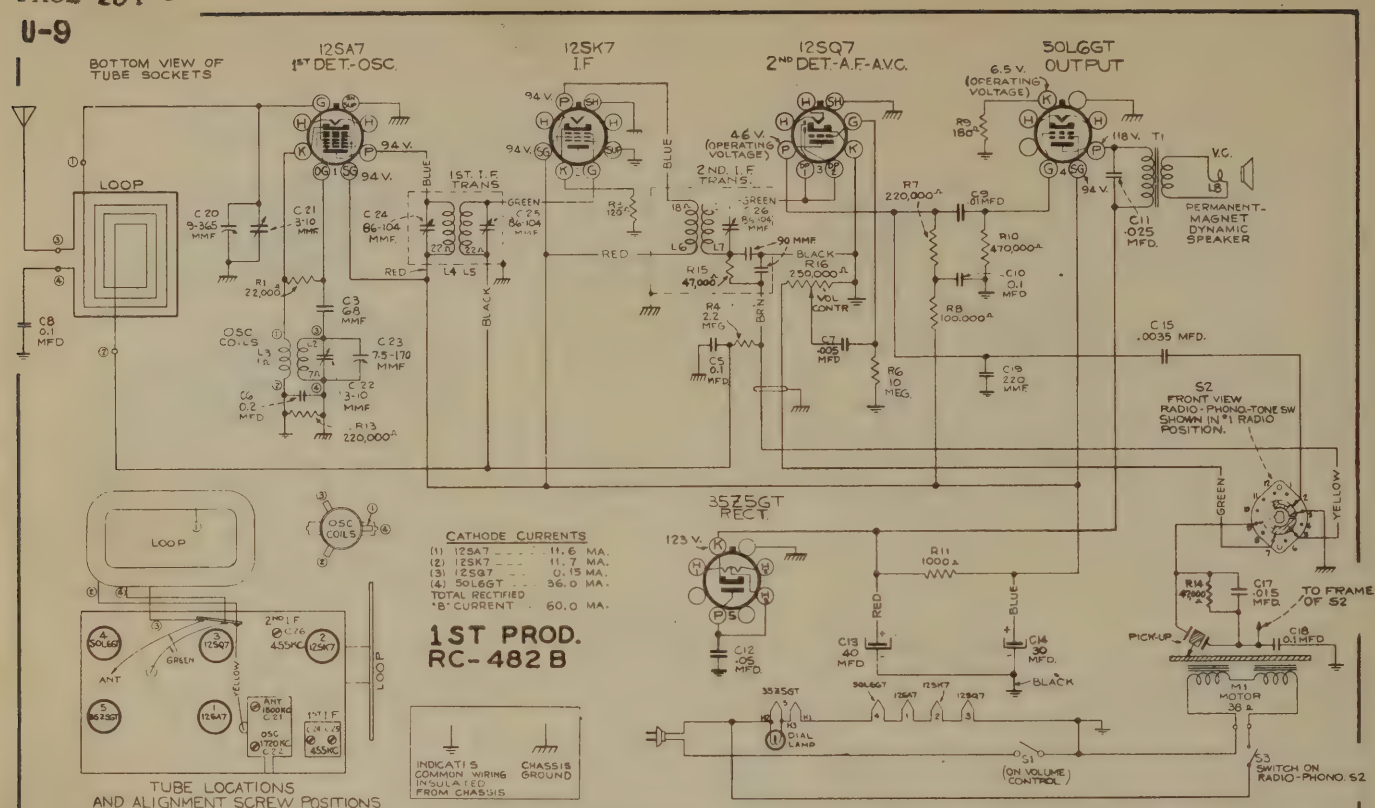
**Test Oscillator.**—Connect the low side of the test oscillator to the receiver chassis through a 0.01 mfd capacitor, and keep the output as low as possible.

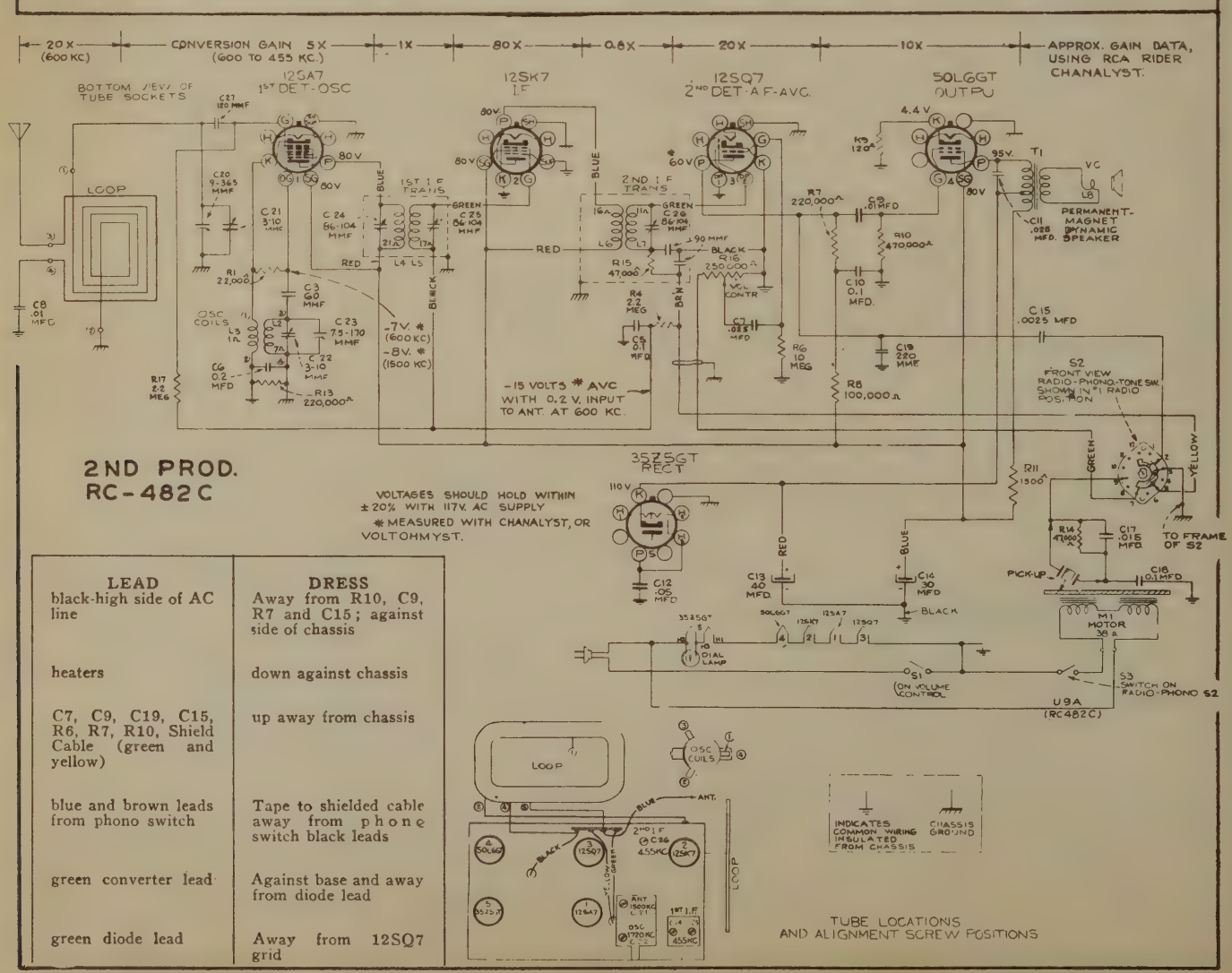
**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should coincide with the left hand mark stamped in the dial backplate.

**Antenna.**—This set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the green antenna lead, stapled to the base of the cabinet. The antenna should not be longer than 100 feet including the lead-in. If it is longer, connect a 100 mmfd. capacitor in series with the lead-in.

| Steps | Connect the high side of test oscillator to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for max. output— |
|---|---|---|---|---|
| 1 | Tuning Cond. stator (det.) in series with 0.01 mfd. | 455 kc | Quiet Point at 1,600 kc end of dial | C24, C25, C26 (1st and 2nd I-F transformers) |
| 2 | Antenna lead (green) in series with 100 mmfd. | 1,720 kc | Full Clockwise (out of mesh) | C22 (osc.) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C21 (ant.) |

U-9





20X (600 KC) — CONVERSION GAIN 5X (600 TO 455 KC.) — 1X — 80X — 0.8X — 20X — 10X
APPROX. GAIN DATA, USING RCA RIDER CHANALYST.
BOTTOM VIEW OF TUBE SOCKETS
12SA7 1ST DET-OSC
12SK7 I.F
12SQ7 2ND DET-A.F-AVC.
50L6GT OUTPU
LOOP
1ST I.F TRANS
2ND I.F TRANS
OSC COILS
-7V. * (600 KC)
-8V. * (1500 KC)
-15 VOLTS * AVC WITH 0.2 V. INPUT TO ANT. AT 600 KC.
PERMANENT-MAGNET DYNAMIC SPEAKER
S2 FRONT VIEW RADIO-PHONO-TONE SW. SHOWN IN "1 RADIO POSITION
35Z5GT RECT
DIAL LAMP
(ON VOLUME CONTROL)
S3 SWITCH ON RADIO-PHONO S2
M1 MOTOR
PICK-UP
TO FRAME OF S2
2ND PROD. RC-482C
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117V. AC SUPPLY
* MEASURED WITH CHANALYST, OR VOLTOHMYST.
U9A (RC482C)
INDICATES COMMON WIRING INSULATED FROM CHASSIS
CHASSIS GROUND
TUBE LOCATIONS AND ALIGNMENT SCREW POSITIONS

| LEAD | DRESS |
|---|---|
| black-high side of AC line | Away from R10, C9, R7 and C15; against side of chassis |
| heaters | down against chassis |
| C7, C9, C19, C15, R6, R7, R10, Shield Cable (green and yellow) | up away from chassis |
| blue and brown leads from phono switch | Tape to shielded cable away from phone switch black leads |
| green converter lead | Against base and away from diode lead |
| green diode lead | Away from 12SQ7 grid |

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | **RC-482B** |
| 30303 | Capacitor—.0035 mmfd. (C15) |
| 13057 | Capacitor—68 mmfd. (C3) |
| 33584 | Capacitor—.005 mfd. (C7) |
| 4937 | Capacitor—.01 mfd. (C9) |
| 11315 | Capacitor—.015 mfd. (C17) |
| 30938 | Capacitor—.025 mfd. (C11) |
| 32787 | Capacitor—.05 mfd. (C12) |
| 4839 | Capacitor—0.1 mfd. (C5, C8, C10, C18) |
| 34505 | Capacitor—0.2 mfd. (C6) |
| 34873 | Capacitor—Electrolytic comprising 1 section of 40 mfd. and 1 section of 30 mfd. |
| 34443 | Coil—Oscillator coil (L2, L3) |
| 34843 | Condenser—Tuning condenser (C20, C21, C22, C23) |
| 34034 | Control—Volume control and power switch (R16, S1) |
| 32634 | Cord—Drive cord |
| 33453 | Drum—Drive cord drum |
| 34841 | Frame—Dial and drive frame complete—less indicator drive cord, tuning shaft and drive drum |
| 34842 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 35130 | Loop—Antenna loop |
| 30868 | Plug—2-contact female plug for motor cable |
| 5119 | Plug—3-contact female plug for speaker cable |
| 12071 | Resistor—120 ohms, ½ watt (R3) |
| 30545 | Resistor—180 ohms, ½ watt (R9) |
| 30152 | Resistor—1,000 ohms, 1 watt (R11) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R15) |
| 12412 | Resistor—47,000 ohms, ½ watt (R14) |
| 14560 | Resistor—100,000 ohms, ½ watt (R8) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7, R13) |
| 12285 | Resistor—470,000 ohms, ½ watt (R10) |
| 12679 | Resistor—2.2 megohm, ½ watt (R4) |
| 13601 | Resistor—10 megohm, ½ watt (R6) |
| 34033 | Shaft—Tuning shaft |
| 34449 | Socket—Dial lamp socket |
| 32537 | Socket—Tube socket |
| 33296 | Spring—Retaining spring for drum, Stock No. 33453 |
| 34844 | Transformer—1st i.f. transformer (L4, L5, C24, C25) |
| 34442 | Transformer—2nd i.f. transformer (L6, L7, C26, R15) |
| 11908 | Washer—"C" washer for holding shaft, Stock No. 34033 |
| | **SPEAKER ASSEMBLIES (RL 81-2)** |
| 32907 | Cap—Dust cap |
| 34554 | Cone—Cone complete with suspension and voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 34846 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (84843-1)** |
| 34847 | Cone—Cone complete with voice coil, center suspensions, dust screen and rim gaskets |
| 5118 | Plug—3-prong male plug for speaker |
| 34848 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33680 | Cup—Needle cup |
| 34849 | Dial—Glass dial scale |
| 34850 | Hinge—Lid hinge |
| 33942 | Knob—"Radio-Phono" switch knob |
| 30863 | Knob—Tuning or volume control and power switch knob |
| 30870 | Plug—2-contact male plug for motor leads |
| 32610 | Rest—Rubber pickup rest |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 33942 and 30863 |
| 32627 | Support—Lid support |
| 33467 | Switch—Combination "Radio-Phono" switch tone control (S2) |
| 33099 | Turntable—Turntable complete with spindle and rubber drive tire |

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-482C)** |
| 12724 | Capacitor—120 mmfd. (C27) |
| 13057 | Capacitor—68 mmfd. (C3) |
| 34459 | Capacitor—.0025 mfd. (C15) |
| 11315 | Capacitor—.015 mfd. (C17) |
| 30938 | Capacitor—.025 mfd. (C7, C11) |
| 4937 | Capacitor—.01 mfd. (C8, C9) |
| 32787 | Capacitor—.05 mfd. (C12) |
| 4839 | Capacitor—0.1 mfd. (C5, C10, C18) |
| 34505 | Capacitor—0.2 mfd. (C6) |
| 34873 | Capacitor—Electrolytic comprising 1 section of 40 mfd. and 1 section of 30 mfd. |
| 34443 | Coil—Oscillator coil |
| 34843 | Condenser—Tuning condenser |
| 34034 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 33453 | Drum—Drive cord drum |
| 34841 | Frame—Dial and drive frame complete—less indicator drive cord, tuning shaft and drive drum |
| 34842 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 35130 | Loop—Antenna loop |
| 30868 | Plug—2-contact female plug for motor cable |
| 5119 | Plug—3-contact female plug for speaker cable |
| 12071 | Resistor—120 ohms, ½ watt (R9) |
| 3153 | Resistor—1,500 ohms, 1 watt (R11) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 5132 | Resistor—47,000 ohms, 1/10 watt |
| 12412 | Resistor—47,000 ohms, ½ watt (R14) |
| 14560 | Resistor—100,000 ohms, ½ watt (R8) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7, R13) |
| 12285 | Resistor—470,000 ohms, ½ watt (R10) |
| 12679 | Resistor—2.2 meg., ½ watt (R4, R17) |
| 13601 | Resistor—10 meg., ½ watt (R6) |
| 34033 | Shaft—Tuning shaft |
| 34449 | Socket—Dial lamp socket |
| 32537 | Socket—Tube socket |
| 33296 | Spring—Retaining spring for drum Stock No. 33453 |
| 34844 | Transformer—First I-F transformer |
| 34442 | Transformer—Second I-F transformer |
| 11908 | Washer—"C" washer for holding shaft Stock No. 34033 |
| | **SPEAKER ASSEMBLIES (RL-81A3)** |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 35904 | Transformer—Output transformer |
| | **MOTOR ASSEMBLIES** |
| 32654 | Ball—Ball for turntable bearing |
| 33897 | Base—Motor base and ball assembled |
| 33902 | Motor—Complete motor 105-125 volts, 60 cycle (M1) |
| 34496 | Motor—Complete motor 105-125 volts, 50 cycle (M1) |
| 33896 | Mounting—Motor cradle mounting hardware and retainer |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33591 | Arm—Pickup arm only—less cartridge, base and cable |
| 34481 | Arm—Pickup pivot arm and shaft |
| 34482 | Base—Pickup mounting base |
| 34758 | Bushing—Rubber bushing and metal bushing for pickup pivot arm shaft |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 34311 | Ring—Retaining ring for pivot shaft |
| 33529 | Screw—Needle screw |

**2nd Production, RC-482C:**

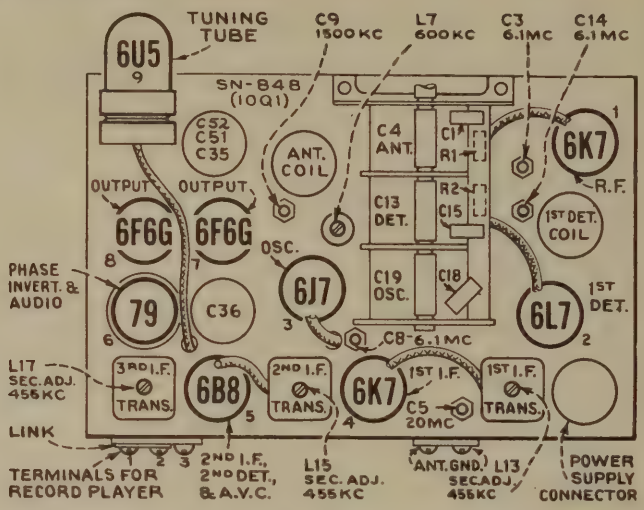
Add Stock No.

35685 Speaker (RL-81A-3)

# MODEL 10Q1

## Chassis No. RC-337B

## Ten-Tube, Three-Band, Superheterodyne Receiver




*Top View, Showing Location of Tubes and Trimmers*

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)..530-1720 kc (566-174 m)
Medium Wave ("B" Band).....2.3-7.0 mc (130-42.8 m)
Short Wave ("C" Band).....7.0-22 mc (42.8-13.6 m)

INTERMEDIATE FREQUENCY ..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6K7..... R-F Amplifier
(2) RCA-6L7..... 1st-Detector
(3) RCA-6J7..... Oscillator
(4) RCA-6K7..... 1st I-F Amplifier
(5) RCA-6B8..... 2nd I-F amp., 2nd-Det., A.V.C.
(6) RCA-79..... Phase Inverter and Audio
(7) RCA-6F6-G..... Power Output
(8) RCA-6F6-G..... Power Output
(9) RCA-6U5..... Tuning Indicator
(10) RCA-5U4-G (In PSU 10A, 10B, 10C A-C power supply unit)..... Rectifier
(10) RCA-5T4 (In PSU 10E D-C power supply unit) ..... Rectifier

Pilot Lamps (2)..... Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

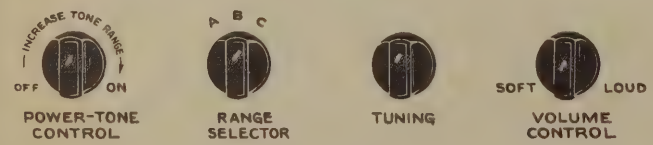
Undistorted..... 10 watts
Maximum..... 12 watts

LOUDSPEAKER (RL-63H-4)

Type..... 8-inch electrodynamic
Voice-coil Impedance at 400 cycles.....2.2 ohms

POWER SUPPLY RATINGS

| | Volts | Cycles |
|---|---|---|
| A-C Ratings | | |
| With PSU 10A Power Supply Unit | 105-125 | 50-60 |
| With PSU 10B Power Supply Unit | 105-125 | 25-60 |
| With PSU 10C Power Supply Unit | 105-130, 140-160, 200-225, 225-250 | 50-60 |
| D-C Ratings | | |
| With PSU 10E Power Supply Unit | 105-125, 210-250 | D-C |




*Location of Controls*

To turn on the receiver, turn the power-tone control fully clockwise, past the snap of the switch. To turn off the receiver, turn this knob fully counter-clockwise. The sensitivity switch is mounted on rear of chassis.

**Plug for Extension Loudspeaker.**—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired. A permanent-magnet dynamic speaker, with voice-coil impedance of **not less than 2 ohms** is recommended.

An extension speaker with 2-ohm voice coil will receive approximately half the power output of the receiver. With a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased. (A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.) The RCA MI-6248 Alnico 8-inch diameter permanent-magnet dynamic loudspeaker with 2-ohm voice coil, and 5-watt power-handling capacity is recommended.

1001

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end marked on the dial scales, and gang-condenser fully meshed. The indicator has a spring clip for attachment to the cable.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| Leave sensitivity switch open (minimum sensitivity) for all alignment operations. | | | | |
| 1 | 6B8 2nd I-F grid cap, in series with .01 mfd. | 455 kc | "C" band Quiet Point. | L16 and L17 (3rd I-F Trans.) |
| 2 | 6K7 1st I-F grid cap, in series with .01 mfd. | | | L14 and L15 (2nd I-F Trans.) |
| 3 | 6L7 1st Det. grid cap, in series with .01 mfd. | | | L12 and L13 (1st I-F Trans.) |
| 4 | Antenna Terminal, in series with 300 ohms | 6.1 mc | 6.1 mc (29°) "B" band | C8 (osc.)* C14 (det.)† C3 (ant.) |
| 5 | Antenna Terminal, in series with 300 ohms | 20 mc | 20 mc (23.5°) "C" band | C5 (osc.)†† |
| 6 | Antenna Terminal, in series with 200 mmf. | 1,500 kc | 1,500 kc (31°) "A" band | C9 (osc.) |
| 7 | Antenna Terminal, in series with 200 mmf. | 600 kc | 600 kc (144.5°) "A" band | L7 (osc.)‡ |
| 8 | Repeat Step No. 6 | | | |

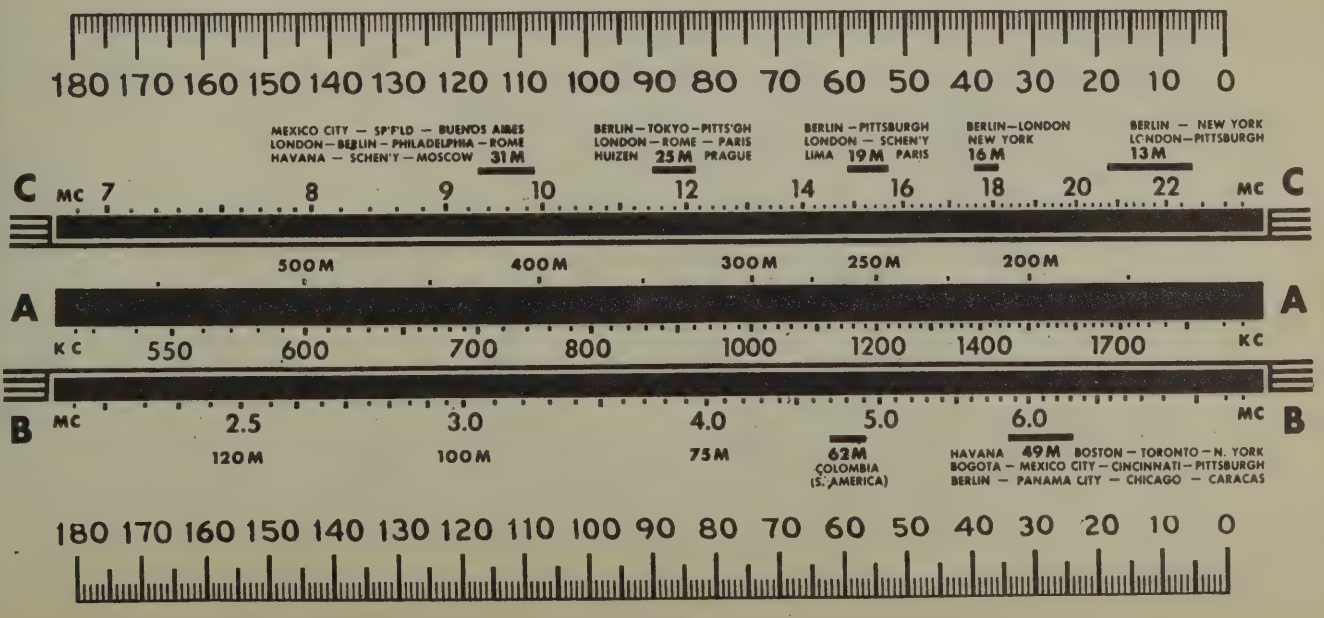
* Use **minimum** capacity peak if two peaks can be obtained.

† Rock the gang condenser slightly, and use the **maximum** capacity peak if two peaks can be obtained with trimmer C14. Check to determine that C8 has been adjusted to the correct peak by turning the receiver to 5.19 mc (50°), where a weaker signal should be received.

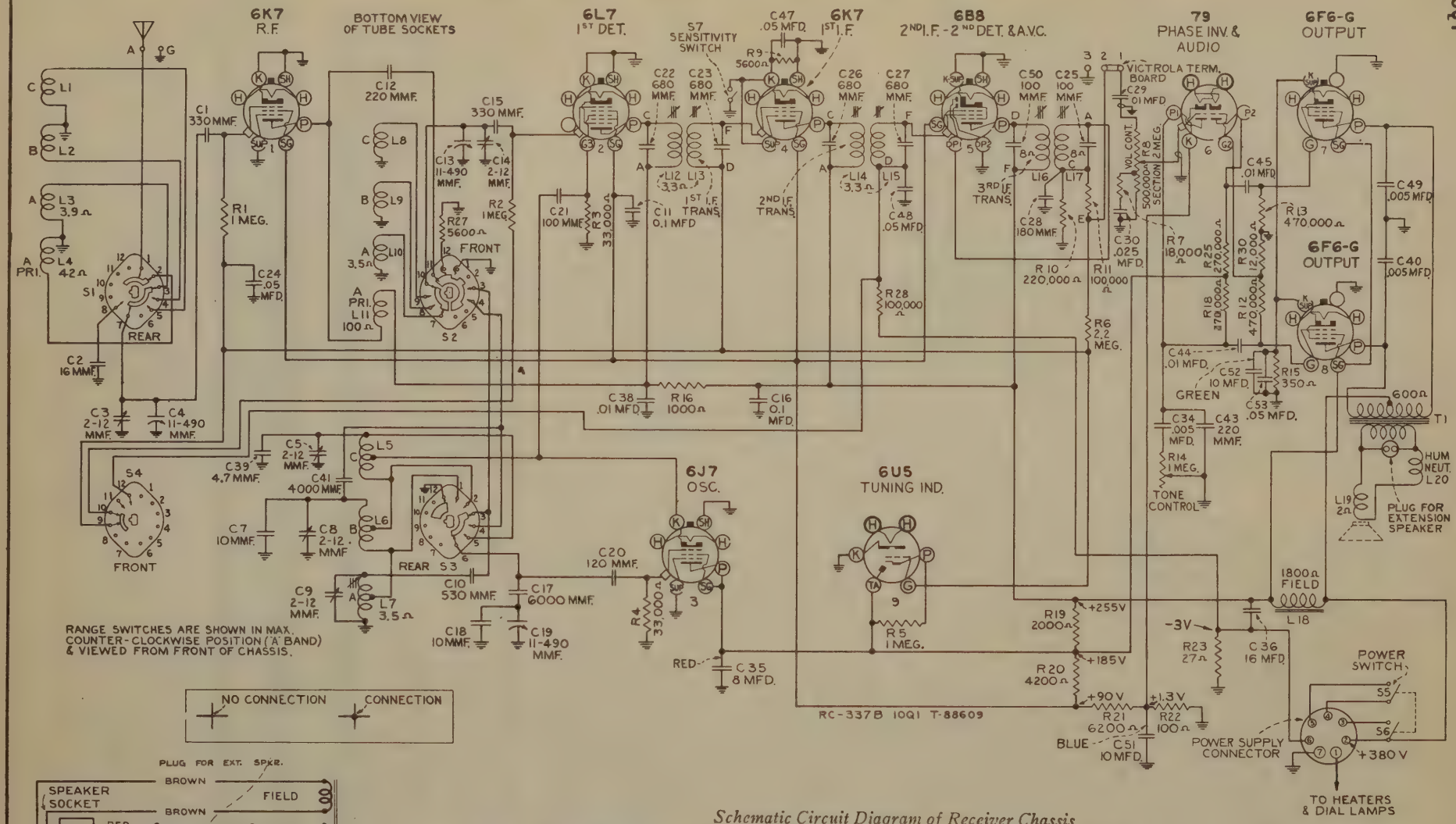
†† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C5 has been adjusted to the correct peak by turning the receiver dial to 19.09 mc (29.5°), where a weaker signal should be received.

‡ Rock gang condenser slightly while peaking L7 for maximum output.

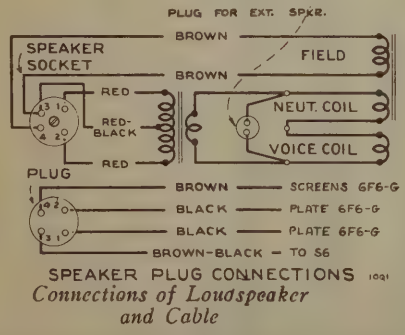
**NOTE:** Oscillator tracks 455 kc **above** the signal on all bands.


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
MEXICO CITY — SP'FLD — BUENOS AIRES
LONDON — BERLIN — PHILADELPHIA — ROME
HAVANA — SCHEN'Y — MOSCOW
31 M
BERLIN — TOKYO — PITTS'GH
LONDON — ROME — PARIS
HUIZEN 25 M PRAGUE
BERLIN — PITTSBURGH
LONDON — SCHEN'Y
LIMA 19 M PARIS
BERLIN — LONDON
NEW YORK
16 M
BERLIN — NEW YORK
LONDON — PITTSBURGH
13 M
C MC 7 8 9 10 12 14 16 18 20 22 MC C
500 M 400 M 300 M 250 M 200 M
A KC 550 600 700 800 1000 1200 1400 1700 KC A
B MC 2.5 3.0 4.0 5.0 6.0 MC B
120 M 100 M 75 M
62 M COLOMBIA (S. AMERICA)
HAVANA 49 M BOSTON — TORONTO — N. YORK
BOGOTA — MEXICO CITY — CINCINNATI — PITTSBURGH
BERLIN — PANAMA CITY — CHICAGO — CARACAS
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*




*Schematic Circuit Diagram of Receiver Chassis*

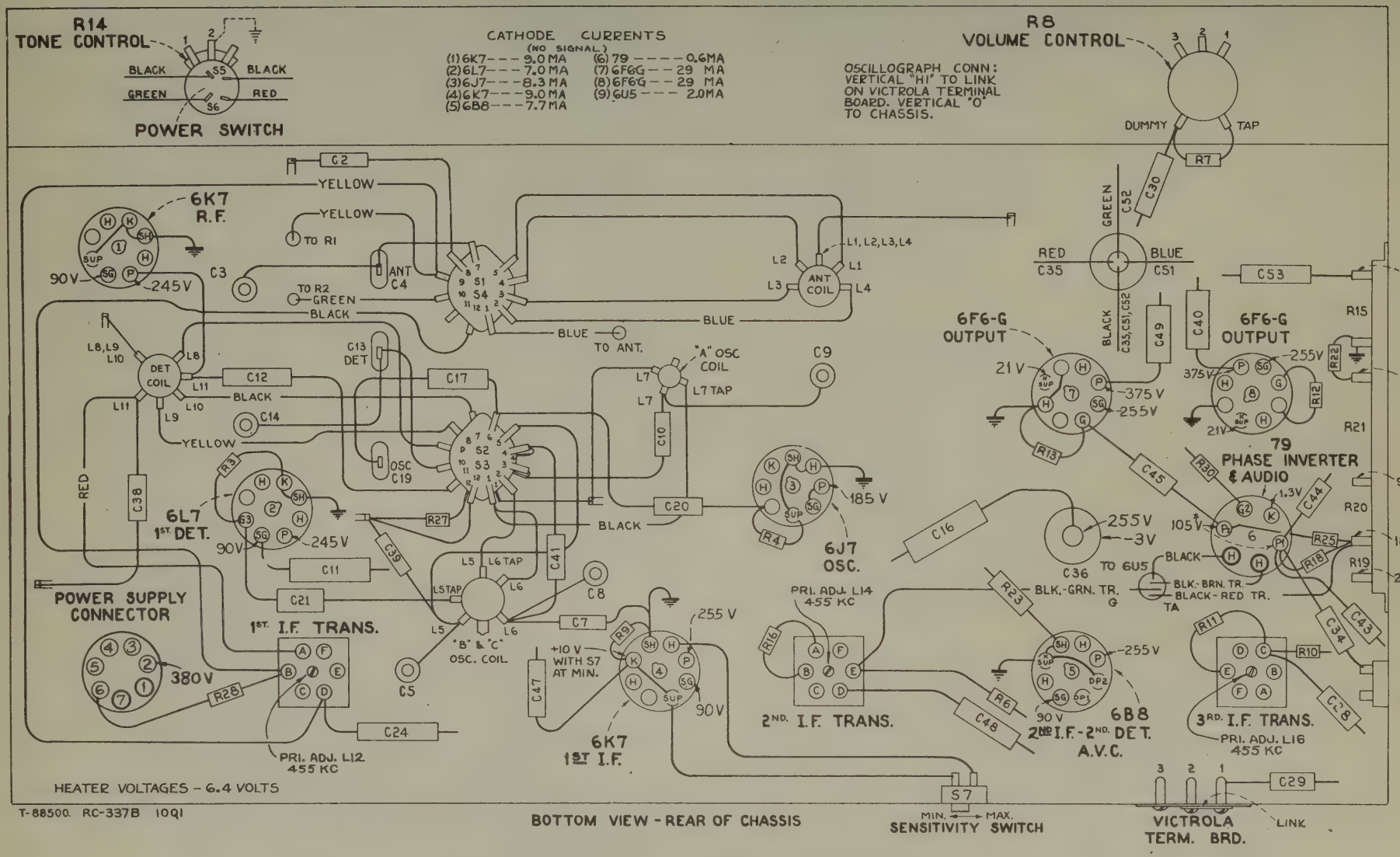



SPEAKER PLUG CONNECTIONS 1091
*Connections of Loudspeaker and Cable*

**The power supply units (PSU 10A, 10B, 10C, and 10E) for this receiver are described in separate service data sheets, which should be referred to for further information.**

**Precautionary Lead Dress.—**

1. Dress the leads from the 1st-detector coil to the range switch away from the trimmer C14.
2. Dress all leads away from the tap on the volume control.
3. Dress the blue lead from the antenna terminal to the range switch close to the chassis.

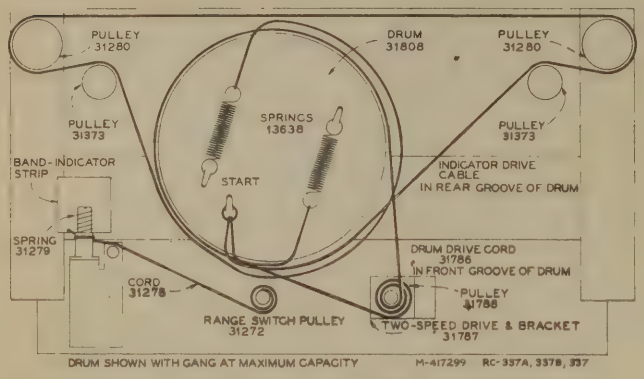



*Bottom View of Receiver Chassis, with R-F Wiring Diagram and Socket Voltages*

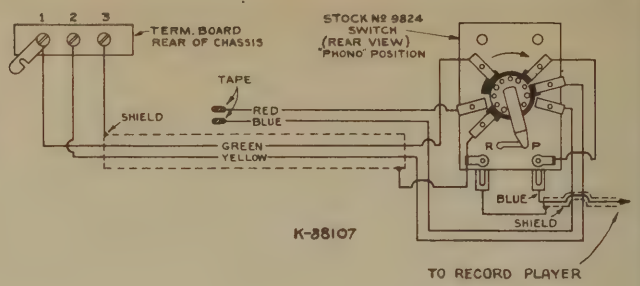
Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at maximum, and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

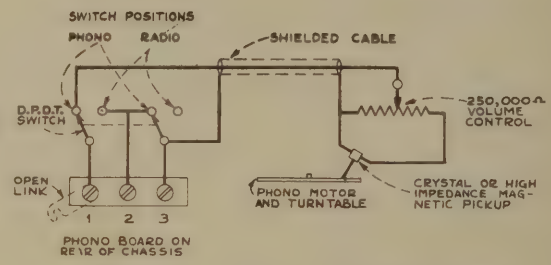
*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

1091




*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*




*Record Player Connections*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

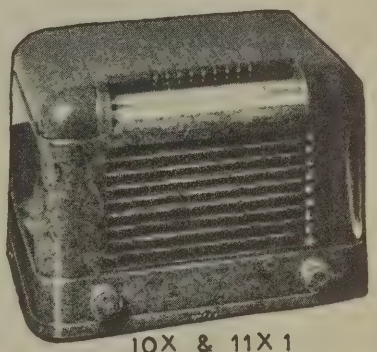
| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES (RC337B)** |
| 13216 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph input terminal board |
| 31303 | Bracket—Band indicator mounting bracket—less indicating strip, spring, and cord |
| 31820 | Cable—Indicator pointer drive cable |
| 30766 | Cap—Rubber cap for Magic Eye |
| 4629 | Cap—Tube shield cap |
| 12714 | Capacitor—Trimmer 2-12 mmfd. (C3, C5, C8, C9, C14) |
| 14392 | Capacitor—4.7 mmfd. (C39) |
| 13200 | Capacitor—10 mmfd. (C7, C18) |
| 31791 | Capacitor—16 mmfd. (C2) |
| 31270 | Capacitor—100 mmfd. (C25, C50) |
| 12720 | Capacitor—100 mmfd. (C21) |
| 12724 | Capacitor—120 mmfd. (C20) |
| 13003 | Capacitor—180 mmfd. (C28) |
| 12694 | Capacitor—220 mmfd. (C12, C43) |
| 12952 | Capacitor—330 mmfd. (C1, C15) |
| 31790 | Capacitor—530 mmfd. (C10) |
| 31552 | Capacitor—680 mmfd. (C22, C23, C26, C27) |
| 31792 | Capacitor—4,000 mmfd. (C41) |
| 31405 | Capacitor—6,000 mmfd. (C17) |
| 4838 | Capacitor—.005 mfd. (C34, C40, C49) |
| 14393 | Capacitor—.01 mfd. (C29, C38, C44, C45) |
| 4870 | Capacitor—.025 mfd. (C30) |
| 4886 | Capacitor—.05 mfd. (C24, C47, C48, C53) |
| 4839 | Capacitor—0.1 mfd. (C16) |
| 31809 | Capacitor—Comprising one 8 mfd. and two 10 mfd. sections (C35, C51, C52) |
| 5212 | Capacitor—16 mfd. (C36) |
| 31818 | Clip—Magic Eye mounting clip |
| 31780 | Coil—Antenna coil (L1, L2, L3, L4) |
| 31782 | Coil—Oscillator coil—"A" band only (L7) |
| 31783 | Coil—Oscillator coil—"B" and "C" bands only (L5, L6) |
| 31781 | Coil—R-f coil (L8, L9, L10, L11) |
| 31774 | Condenser—3-gang variable tuning condenser (C4, C13, C19) |
| 31278 | Cord—Band indicator cord |
| 31786 | Cord—Variable condenser drive cord |
| 31787 | Drive—Two-speed drive and mounting bracket |
| 31808 | Drum—Variable condenser drive cord drum |
| 31304 | Indicator—Band indicator strip |
| 11891 | Lamp—Dial lamp |
| 31817 | Plate—Cushion socket mounting plate—less socket |
| 5040 | Plug—4-contact female plug for speaker cable |
| 14404 | Plug—7-contact male plug for power input |
| 31788 | Pulley—Two-speed drive pulley |
| 31280 | Pulley—Indicator pointer drive cord pulley (large) |
| 31373 | Pulley—Indicator pointer drive cord pulley (small) |
| 31272 | Pulley—Range switch pulley |
| 12453 | Resistor—27 ohms, ½ watt (R23) |
| 31821 | Resistor—100 ohms, 1/10 watt (R22) |
| 14837 | Resistor—1,000 ohms, 1/10 watt (R16) |
| 31789 | Resistor—5,600 ohms, 1/10 watt (R9, R27) |
| 11399 | Resistor—12,000 ohms, 1/10 watt (R30) |
| 13045 | Resistor—18,000 ohms, ½ watt (R7) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R3, R4) |
| 14560 | Resistor—100,000 ohms, ½ watt (R11, R28) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R10) |
| 12199 | Resistor—270,000 ohms, ½ watt (R18, R25) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R12, R13) |
| 12013 | Resistor—1 meg., 1/10 watt (R1, R2, R5) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R6) |
| 31814 | Resistor—Voltage divider comprising one 2,000 ohm, one 4,200 ohm, one 6,200 ohm, and one 350 ohm sections (R15, R19, R20, R21) |
| 14887 | Retainer—Indicator drive cord pulley retainer |
| 4669 | Screw—No. 8-32 x ⅜-in. square head set screw for pulley, Stock Nos. 31272 and 31788, and drum, Stock No. 31808 |
| 3682 | Shield—Tube shield |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31251 | Socket—Octal base tube socket |
| 31816 | Socket—6-contact tube socket |
| 31279 | Spring—Band indicator tension spring |
| 13638 | Spring—Tension spring for pointer drive cable, or variable condenser drive cord |
| 30953 | Switch—S.P.S.T. sensitivity switch (S7) |
| 31775 | Switch—Range switch (S1, S2, S3, S4) |
| 31807 | Tone Control and power switch (R14, S5, S6) |
| 31779 | Transformer—First i-f transformer (L12, L13, C22, C23) |
| 31779 | Transformer—Second i-f transformer (L14, L15, C26, C27) |
| 31268 | Transformer—Third i-f transformer (L16, L17, C25, C50) |
| 31450 | Volume Control (R8) |
| | **SPEAKER ASSEMBLIES (RL63H-4)** |
| 31825 | Cap—Speaker cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L20) |
| 11234 | Coil—Speaker field coil (L18) |
| 31310 | Cone—Speaker cone and voice coil (L19) |
| 5039 | Plug—4-contact male plug for speaker |
| 31829 | Speaker complete |
| 14534 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31833 | Dial—Dial scale and crystal |
| 31832 | Escutcheon—Dial scale escutcheon—less dial scale and crystal |
| 31717 | Indicator—Indicator pointer and carriage |
| 31802 | Knob—Station selector, tone control, volume control or range switch knob |
| 30868 | Plug—2-contact female plug for speaker cable |
| 30870 | Plug—2-contact male plug for speaker cable |
| 31287 | Rod—Pointer carriage slide rod |
| 14270 | Spring—Retaining spring for knob Stock No. 31802 |
| 31558 | Spring—Stop spring for pointer slide rod |

# MODELS 10X, 11X-1, 12AX, 12AX2, 12X, 12X2 and 35X AND RADIOLA 516, 517 AND 522

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver

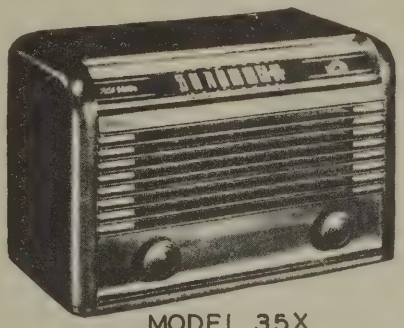
**RC NUMBER IDENTIFICATION**

| Chassis No. | |
|---|---|
| RC-1001 | RCA Victor Model 10X (1st Prod.) |
| RC-1001A | RCA Victor Model 11X1. |
| RC-1001B | RCA Victor Model 10X (2nd Prod.) 12X and 12X2. |
| RC-1001C | RCA Victor Model 12AX, 12AX2 and 35X. Radiola Model 516, 517 and 522 (1st Prod.) |
| RC-1022A | RCA Victor Model 12X and 35X (2nd Prod.) RCA Victor Model 522 (2nd Prod.) |



10X & 11X1

*Model 12AX 12X (Brown Plastic)*



MODEL 35X

*Model 35X—2nd Production*

*Model 12AX2 12X2 (Antique Ivory)*

RADIOLA 516

RADIOLA 517

RADIOLA 522

## Specifications

FREQUENCY RANGE ..... 530-1,720 kc
Intermediate Frequency ..... 455 kc

POWER SUPPLY RATINGS
105-125 volts, direct current, or 50-60 cycles ..... 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)
Undistorted .....0.8 watts Maximum .....1.2 watts

LOUDSPEAKER ..... 5 inch permanent magnet
or 5-inch Electrodynamic

## Alignment Procedure

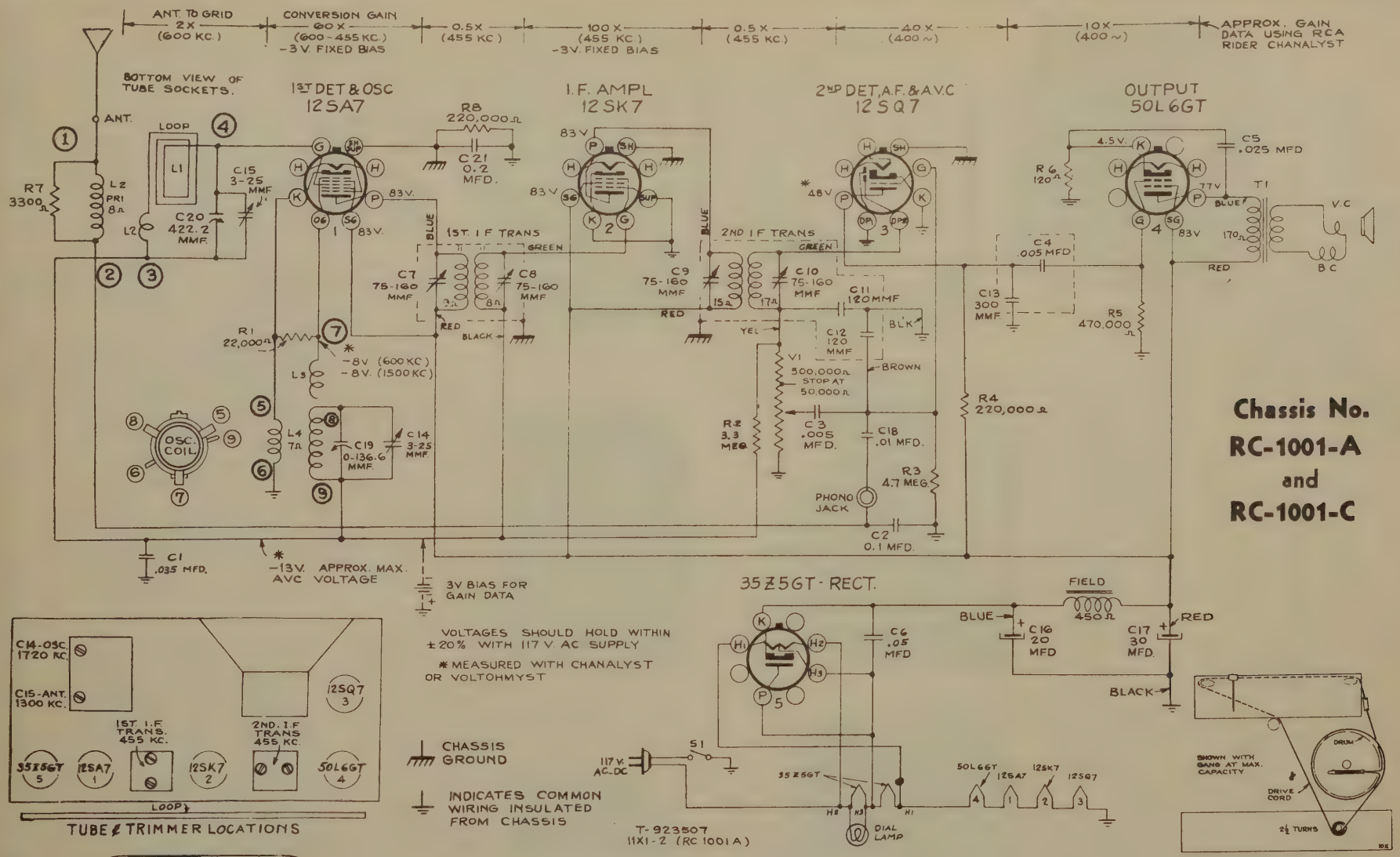
**Output Meter Alignment.**—If this method is used connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

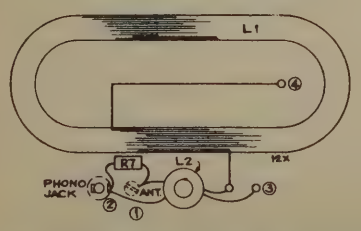
**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor. When the electronic voltmeter is used as an alignment indicator the output of the test oscillator should be adjusted to produce several volts of AVC. With the output meter alignment method the oscillator output should be kept as low as possible.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 grid in series with 0.1 mfd. | 455 kc | Quiet Point at 1,600 kc end of dial | C10, C9 2nd I-F Transformer |
| 2 | 12SA7 grid in series with 0.1 mfd. | | | C8, C7 1st I-F Transformer |
| 3 | Antenna term. of ant. trans. in series with 200 mmfd. | 1,720 kc | 1,720 kc | C14 (osc.) |
| 4 | Radiation Loop | 1,300 kc | Resonance on Signal | C15 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |




**Chassis No. RC-1001-A and RC-1001-C**

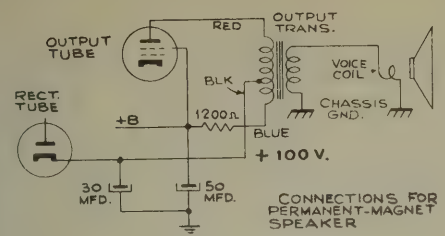



C-3 changed from .005 to .015 mfd. in later production.

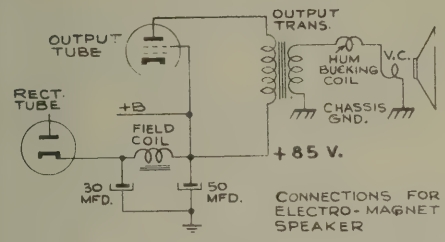
**Precautionary Lead Dress.—**

1. Dress the power cable to switch on the volume control close to the chassis and away from all grid and diode leads and condensers.
2. Dress capacitors in the 12SQ7 grid circuit away from all wiring.
3. Green and black phono wires should be twisted and dressed away from other parts and leads.
4. 50L6-GT filament wires should be dressed to rear of chassis and away from the second I-F transformer leads.
5. Dress brown lead from second I-F transformer to 12SQ7 away from power cable.
6. Dress wire to No. 1 grid of the 12SA7 away from pilot lamp leads.
7. Dress wire from loop to variable condenser away from chassis.
8. Dress all capacitors, leads, etc. which come close to oscillator coil rigidly and as far as possible from it.

# 10X, 11X1, 12AX, 12AX2, 12X, 12X2, 35X, 516, 517, 522




CONNECTIONS FOR PERMANENT-MAGNET SPEAKER




CONNECTIONS FOR ELECTRO-MAGNET SPEAKER

## SUBSTITUTE SPEAKERS "PM" or "EM" SPEAKERS MAY BE USED

WHEN ORDERING REPLACEMENT PARTS FOR SPEAKERS, NOTE THE IDENTIFICATION NUMBER STAMPED ON THE SPEAKER FRAME. IF THE NUMBER STAMPED ON THE SPEAKER DOES NOT APPEAR IN THE FOLLOWING LIST, ORDER THE REQUIRED PART BY DESCRIPTION, AND SPECIFY THE IDENTIFYING NUMBER STAMPED ON THE SPEAKER AND THE RECEIVER MODEL NUMBER.

Alternate "EM" and "PM" speaker connections are shown in the accompanying diagrams.

In 1st production of the following models, the speaker is RL-81-B2. In later production, several substitute speakers are used, as listed below.

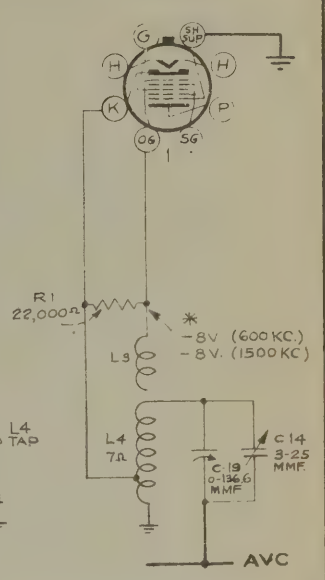
| MODEL NUMBER | CHASSIS NUMBER |
|---|---|
| 10X (2nd Prod.) | RC-1001B |
| 12X, 12X-2 | RC-1001B |
| 12AX, 12AX-2 | RC-1001C |

**OUTPUT TRANS.**

"EM" Speakers
Stock # 38994

"PM" Speakers
Stock # 36800

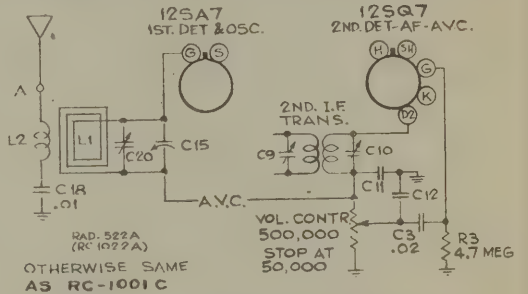
| NUMBER STAMPED ON SPEAKER | CONE AND VOICE COIL STOCK No. | FIELD COIL STOCK No. |
|---|---|---|
| RL-86-A3 | 35570 | 39543 |
| RL-86-B1 | 39447 | 39448 |
| RL-86-B4 | 39447 | 39448 |
| 92161-3 | 38352 | PM |
| 92161-4 | 39535 | PM |
| 92161-5 | 38352 | PM |
| 92322-2 | 39536 | PM |
| 92374-1 | 39537 | PM |




**OSCILLATOR CIRCUIT**

**MODELS 10x, 12x, 12x2**

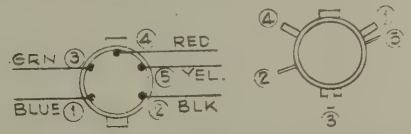
**Chassis No. RC-1001 & RC-1001B**




**Chassis No.** RC-1022-A

*Oscillator Coil–*
*-Stock No. 36801*

Two types of Stock No. 36801 coils are in use: One type has terminal lugs, the other has leads. Both types are shown in the accompanying sketch.




COIL WITH LEADS STOCK NO. 36801



COIL WITH LUGS STOCK NO. 36801

## ORIGINAL SPEAKER LISTING

| RL-81B2 | RL-86A1 | RL-86A3 | RL-86B1<br>RL-86B4<br>92379-1 |
|---|---|---|---|
| 10x, 12x, 12x2 (RC-1001B)<br>12AX, 12AX2 (RC-1001C) | 10x (RC-1001)<br>11x1 (RC-1001A) | 516, 517 | 12x (RC-1022A)<br>35x, 522 |

**VARIATIONS IN MODELS**

Either a "PM" or "EM" speaker may be used. $C_{21}$ and R8 are omitted in Models 10X, 12X and 12X2, and a tapped oscillator coil, Stock #36234, is used - *(see schematic above).* Some models use a filter capacitor Stock #36301, in which $C_{17}$ is 50 mfd. and $C_{16}$ is 30 mfd. *(refer to parts listing).*

The phonograph jack is omitted in **Chassis No.** RC-1022-A

# 10X, 11X1, 12AX, 12AX2, 12X, 12X2, 35X, 516, 517, 522

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES Model 10X (RC-1001)** |
| 11315 | Capacitor—.015 mfd. |
| 37359 | Capacitor—1 section of .005 mfd., and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 35348 | Capacitor—Electrolytic comprising 1 section of 30 mfd., and 1 section of 20 mfd. |
| 37356 | Coil—Loop primary coil (Antenna) |
| 36234 | Coil—Oscillator coil |
| 37353 | Condenser—Tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 32-in. overall length) |
| 37068 | Indicator—Station selector indicator |
| 37351 | Plate—Dial back plate complete with pulleys—less dial |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 12312 | Resistor—3,300 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket (wafer type) |
| 37605 | Socket—Tube socket (moulded type) |
| 37357 | Spacer—Wood spacer for antenna loop |
| 31418 | Spring—Drive cord spring |
| 37350 | Transformer—Audio transformer (output) |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| 37358 | Winding—Antenna loop winding only |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37360 | Back—Cabinet back |
| 35681 | Base—Roto base complete |
| 37362 | Clamp—Dial clamp (1 set) |
| 37363 | Dial—Dial scale |
| 37831 | Fastener—Push-on fastener for back |
| 37361 | Knob—Volume control or tuning knob |
| 11765 | Lamp—Dial lamp |
| 30900 | Spring—Retaining spring for knobs |
| | **CHASSIS ASSEMBLIES Model 11X1 (RC-1001A)** |
| 11315 | Capacitor—.015 mfd. |
| 37359 | Capacitor—1 section of .005 mfd., and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 35348 | Capacitor—Electrolytic comprising 1 section of 30 mfd., and 1 section of 20 mfd. |
| 37356 | Coil—Loop primary coil (Antenna) |
| 36801 | Coil—Oscillator coil |
| 37353 | Condenser—Tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 32-in. overall length) |
| 37068 | Indicator—Station selector indicator |
| 37351 | Plate—Dial back plate complete with pulleys—less dial |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 12312 | Resistor—3,300 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket (wafer type) |
| 37605 | Socket—Tube socket (moulded type) |
| 37357 | Spacer—Wood spacer for antenna loop |
| 31418 | Spring—Drive cord spring |
| 37350 | Transformer—Audio transformer (output) |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| 37358 | Winding—Antenna loop winding only |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MISCELLANEOUS ASSEMBLIES** |
| 37360 | Back—Cabinet back |
| 35681 | Base—Roto base complete |
| 37362 | Clamp—Dial clamp (1 set) |
| 37363 | Dial—Dial scale |
| 37831 | Fastener—Push-on fastener for back |
| 37361 | Knob—Volume control or tuning knob |
| 11765 | Lamp—Dial lamp |
| 30900 | Spring—Retaining spring for knobs |
| | **CHASSIS ASSEMBLIES Models 12X, 12X2 (RC-1001B)** |
| 37359 | Capacitor—1 section of .005 mfd. and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 50 mfd. 150 volts, and 1 section of 30 mfd. 150 volts |
| 36234 | Coil—Oscillator coil |
| 37356 | Coil—Loop primary coil |
| 37353 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall lgth.) |
| 37068 | Indicator—Station selector indicator |
| 31193 | Lead—Antenna lead |
| 37351 | Plate—Dial back plate complete with pulleys |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 30189 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 12312 | Resistor—3,300 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer—less shield can |
| 36800 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37360 | Back—Cabinet back cover (Used in Model 12X) |
| 37905 | Back—Cabinet back cover (Used in Model 12X2) |
| 37362 | Clamp—Dial clamp |
| 37363 | Dial—Glass dial scale |
| 37831 | Fastener—Push-on fastener for cabinet back |
| 37908 | Handle—Ivory carrying handle (Used in Model 12X2) |
| 37907 | Handle—Walnut carrying handle (Used in Model 12X) |
| 35071 | Knob—Ivory tuning or volume control knob (Used in Model 12X2) |
| 37361 | Knob—Walnut tuning or volume control knob (Used in Model 12X) |
| 11765 | Lamp—Dial lamp |
| 37909 | Mounting—Handle mounting hardware including 2 screws, 2 washers, 2 springs and 2 felt washers |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 37361 and 35071 |
| | **10X Chassis No. RC-1001-B:** |
| | **CHASSIS ASSEMBLIES** |
| | **SAME AS 12X (RC-1001-B)** |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37360 | Back—Cabinet back |
| 35681 | Base—Roto base complete |
| 37362 | Clamp—Dial clamp (1 set) |
| 37363 | Dial—Dial scale |
| 36153 | Fastener—Push-on fastener for back |
| 35078 | Knob—Volume control or tuning knob |
| 11765 | Lamp—Dial lamp |
| 30900 | Spring—Retaining spring for knobs |

# 10X, 11X1, 12AX, 12AX2, 12X, 12X2 35X, 516, 517, 522

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES Models 12AX, 12AX2 (RC-1001C)** |
| 37359 | Capacitor—1 section of .005 mfd. and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 50 mfd. 150 volts, and 1 section of 30 mfd. 150 volts |
| 36801 | Coil—Oscillator coil |
| 37356 | Coil—Loop primary coil |
| 37353 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall lgth.) |
| 37068 | Indicator—Station selector indicator |
| 31193 | Lead—Antenna lead |
| 37351 | Plate—Dial back plate complete with pulleys |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 30189 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 12312 | Resistor—3,300 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer — less shield can |
| 36800 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37360 | Back—Cabinet back cover (Used in Model 12AX) |
| 37905 | Back—Cabinet back cover (Used in Model 12AX2) |
| 37362 | Clamp—Dial clamp |
| 37363 | Dial—Glass dial scale |
| 37831 | Fastener—Push-on fastener for cabinet back |
| 37908 | Handle—Ivory carrying handle (Used in Model 12AX2) |
| 37907 | Handle—Walnut carrying handle (Used in Model 12AX) |
| 35071 | Knob—Ivory tuning or volume control knob (Used in Model 12AX2) |
| 37361 | Knob—Walnut tuning or volume control knob (Used in Model 12AX) |
| 11765 | Lamp—Dial lamp |
| 37909 | Mounting—Handle mounting hardware including 2 screws, 2 washers, 2 springs, and 2 felt washers |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 37361 and 35071 |

## MODEL 35X

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1001C)** |
| 37359 | Capacitor—1 section of .005 mfd., and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 50 mfd., 150 volts, and 1 section of 30 mfd., 150 volts |
| 36801 | Coil—Oscillator coil |
| 37962 | Coil—Loop primary coil |
| 37353 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall lgth.) |
| 37068 | Indicator—Station selector indicator |
| 31193 | Lead—Antenna lead |
| 37351 | Plate—Dial back plate complete with pulleys |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 30189 | Resistor—120 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer — Second I.F. transformer — less shield can |
| 38994 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39775 | Back—Cabinet back |
| 39780 | Dial—Glass dial scale |
| 33006 | Feet—Rubber feet—Pkg. of 4 |
| 36722 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 30900 | Spring—Retaining spring for knobs |

## 35X—2ND PROD. (RC-1022-A)
## 12X—2ND PROD. (RC-1022-A)

### Service Data:

Models 12X—2nd Production and 35X—2nd Production are identical except for cabinet design. The RC-1022-A chassis used in both these receivers is similar to the RC-1001-C chassis used in Model 35X—1st Production, except that the phonograph jack of the 1st Production 35X has been omitted in the RC-1022-A chassis, as shown in the accompanying sketches.

For replacement parts list for both receivers, refer to the Service Notes for 35X (RC-1001-C) with the exception of the following parts used in the 12X—2nd Production and 35X—2nd Production:

| Stock No. | Description |
|---|---|
| 35348 | Capacitor — Electrolytic, comprising 1 section of 20 mfd., 150 volts (C17), and 1 section of 30 mfd., 150 volts (C16) |
| 36248 | Capacitor—.02 mfd. |
| 34298 | Capacitor—0.1 mfd. |
| 34662 | Cord — Drive cord (approx. 33-in. overall length) |
| 39823 | Loop—Antenna loop |
| 31251 | Socket—Tube socket—wafer |
| 37605 | Socket — Tube socket — moulded |
| 37364 | Transformer — Second I. F. transformer |

**MISCELLANEOUS ASSEMBLIES**

| | |
|---|---|
| 37906 | Back—Cabinet back (12X—2nd Prod.) |
| 39775 | Back—Cabinet back (35X—2nd Prod.) |
| 37362 | Clamp—Dial clamp (12X—2nd Prod.) |
| 37363 | Dial—Glass dial scale (12X—2nd Prod.) |
| 39780 | Dial—Glass dial scale (35X—2nd Prod.) |
| 37831 | Fastener—Push fastener (12X—2nd Prod.) |
| 37907 | Handle—Carrying handle (12X—2nd Prod.) |
| 35078 | Knob — Volume or tuning knob (12X—2nd Prod.) |
| 36722 | Knob — Volume or tuning knob (35X—2nd Prod.) |
| 37909 | Mounting—Carrying handle mounting hardware (12X—2nd Prod.) |

### Antenna Coupling Coil:

In 2nd production, the shunt resistor R7 across the primary of the antenna coupling coil is omitted, and the antenna coupling coil is changed from Stock No. 37356 to 37962.

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| | **RADIOLA 516 & 517** |
| | **CHASSIS ASSEMBLIES (RC-1001C)** |
| 37359 | Capacitor—1 section of .005 mfd. and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 50 mfd., 150 volts, and 1 section of 30 mfd., 150 volts |
| 36801 | Coil—Oscillator coil |
| 37962 | Coil—Loop primary coil |
| 37353 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall length) |
| 37068 | Indicator—Station selector indicator |
| 31193 | Lead—Antenna lead |
| 37902 | Loop—Antenna loop |
| 37351 | Plate—Dial back plate complete with pulleys |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 30189 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer—less shield can |
| 38994 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37360 | Back—Back cover for model 516 |
| 39453 | Back—Cabinet back for model 517 |
| 37362 | Clamp—Dial clamp |
| 38811 | Dial—Glass dial scale |
| 37831 | Fastener—Push fastener for cabinet back |
| 39004 | Handle—Carrying handle for cabinet |
| 38810 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 37909 | Mounting—Handle mounting hardware for carrying handle—Model Radiola 516 |
| 14270 | Spring—Retaining spring for knob |
| | **MODEL 522** |
| | **CHASSIS ASSEMBLIES 1st Prod. (RC1001C) 2nd Prod. (RC1022A)** |
| 37355 | Board—Terminal board and receptacle (RC-1001C only) |
| 37359 | Capacitor—Comprising one section of .005 mfd., and one section of .0003 mfd. |
| 35348 | Capacitor—Electrolytic comprising 1 section of 20 mfd., 150 volts and 1 section of 30 mfd., 150 volts |
| 4937 | Capacitor—.01 mfd., 1,000 volts (RC1001C only) |
| 14393 | Capacitor—.01 mfd. (RC1022A only) |
| 36248 | Capacitor—.02 mfd., 700 volts |
| 5196 | Capacitor—.035 mfd., 400 volts |
| 32787 | Capacitor—.05 mfd., 400 volts |
| 43763 | Capacitor—0.1 mfd., 200 volts (RC1001C only) |
| 34298 | Capacitor—0.1 mfd. (RC1022A only) |
| 36801 | Coil—Oscillator coil |
| 37353 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 33-in. overall length) |
| 37068 | Indicator—Station selector indicator |
| 37354 | Loop—Antenna loop (RC1001C only) |
| 39823 | Loop—Antenna loop (RC1022A only) |
| 37351 | Plate—Dial back plate complete with drive cord pulleys less dial |
| 36230 | Pulley—Drive cord pulley |
| 30189 | Resistor—120 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 megohm, ½ watt |
| 30271 | Resistor—4.7 megohm, ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 37605 | Socket—Tube socket, moulded |
| 31251 | Socket—Tube socket, wafer |
| 31418 | Spring—Drive cord spring |
| 36232 | Transformer—First I.F. transformer |
| 37364 | Transformer—Second I.F. transformer |
| 37962 | Transformer—Loop coupling transformer (RC-1001C only) |
| 38994 | Transformer—Speaker transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39776 | Back—Cabinet back (RC1001C only) |
| 39775 | Back—Cabinet back (RC1022A only) |
| 39782 | Dial—Glass dial scale |
| 33006 | Feet—Rubber feet—Pkg. of 4 |
| 38810 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 14270 | Spring—Retaining spring for knob |
| | **ALL MODELS (SEE LISTINGS)** |
| | **SPEAKER ASSEMBLIES (RL-81B2)** |
| 35570 | Cone—Cone complete with voice coil |
| 37612 | Speaker—5-inch permanent magnet speaker complete with cone and voice coil—less output transformer |
| | **SPEAKER ASSEMBLIES (RL-86A1)** |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| 37332 | Speaker—5-inch dynamic speaker complete with cone and voice coil |
| | **SPEAKER ASSEMBLIES (RL86A3)** |
| 35570 | Cone—Cone complete with voice coil |
| | The Field Coil for RL-86-A3 Speaker is Stock No. 39543. |
| | **SPEAKER ASSEMBLIES** |
| | **(RL-86B-1)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil—350 ohms. |
| 39447 | Cone—Cone complete with voice coil |
| | **(RL-86B-4)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil—350 ohms. |
| 39447 | Cone—Cone complete with voice coil |
| | **(92379-1)** |
| 39995 | Coil—Field coil—350 ohms. |
| 39994 | Cone—Cone complete with voice coil |
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of parts required. |

# Model BP10

## Chassis No. RC-544

## Specifications

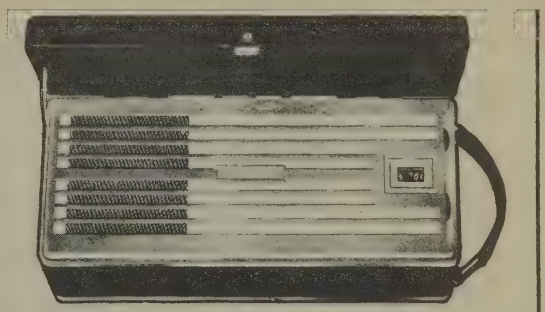
**Frequency Range** ..... 540-1,600 kc
**Intermediate Frequency** ..... 455 kc
**Power Supply**

| Type Battery | Current Consumption | Approximate Life (Intermittent Duty) |
|---|---|---|
| "A"—1.5 volt Eveready No. 950 | 0.25 amperes | 3-5 hours |
| "B"—67.5 volts Eveready No. 467 | 8.5 milliamperes | 25-40 hours |

**Power Output** ..... Undistorted 0.05 watts .... Maximum 0.12 watts

| **Loudspeaker** | **Round** | **Elliptical** |
|---|---|---|
| Type Permanent-Magnet Dynamic ..... | 84991-1 3-inch | RL95-2 2 x 2¼ inches |
| Voice Coil Impedance ..... | 3.0 ohms at 400 cycles | 11.8 ohms at 900 cycles |

Cabinet Dimensions (inches) ..... 3 x 8⅞ x 3⅝
Weight... 4½ lbs. (net) Tuning Drive Ratio..... 1 to 1



## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| PART No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-544)** |
| 36717 | Capacitor—20 mmfd. |
| 36715 | Capacitor—50 mmfd. |
| 36716 | Capacitor—100 mmfd. |
| 12488 | Capacitor—270 mmfd. |
| 36163 | Capacitor—.001 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 36718 | Capacitor—Electrolytic, 10 mfd., 60 volts |
| 36497 | Coil—Oscillator coil |
| 36496 | Condenser—Variable tuning condenser |
| 36495 | Control—Volume control |
| 36606 | Core—Adjustable core and stud for oscillator coil |
| 36503 | Holder—Battery holder complete |
| 36501 | Knob—Tuning knob |
| 36502 | Knob—Volume control knob |
| 30158 | Resistor—820 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 30787 | Resistor—47,000 ohms, ½ watt |
| 3252 | Resistor—100,000 ohms, ½ watt |
| 30652 | Resistor—1 megohm, ½ watt |
| 31417 | Resistor—3.3 megohm, ½ watt |
| 30931 | Resistor—4.7 megohm, ½ watt |
| 30992 | Resistor—10 megohm, ½ watt |
| 31085 | Screw—No. 8-32 x ⅛ set screw for knobs |
| 36500 | Socket—Tube socket |
| 36069 | Socket—1T4 tube socket |
| 36498 | Transformer—First I.F. transformer |
| 36499 | Transformer—Second I.F. transformer |
| | **SPEAKER ASSEMBLIES (84991-501) (Round)** |
| 36504 | Speaker—3-inch P. M. speaker, complete with cone and voice coil, less output transformer |
| 36505 | Transformer—Output transformer |
| | **(RL95-2 Elliptical)** |
| 37807 | Speaker—Elliptical speaker (no transformer) |
| 37806 | Transformer—Output transformer |
| 37951 | Cone—Cone and voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36507 | Bottom—Receiver case bottom cover |
| 36508 | Center—Receiver case center strip |
| 36509 | Handle—Carrying handle and bracket |
| 36696 | Initials—100 initials to each set comprising 25 groups of the average initials and one tube of cement |
| 37156 | Catch—Case back cover catch and spring |
| 37179 | Clip—"B+" battery clip |
| 37180 | Clip—"B—" battery clip |
| 37857 | Pin and Spring—2 pins and 2 springs for lid hinges |
| 36695 | Strap—Shoulder strap |
| 36506 | Switch—Power switch |
| | A number of changes have been made in this model since the first production. The above parts list applies to all models. Changes and Parts effected are listed below. |
| | (1.) **Round Speaker and No Lid Support.** (Serial No. without letter or prefixed "B.") |
| 37855 | Lid—Moulded lid with antenna and cover, sections of lid hinges, and hinge pins and springs—less chrome panel (See note B) |
| 37856 | Panel—Chrome front panel with sections of lid hinges, and hinge pins and springs—less moulded lid (See note A) |
| | (2.) **Round Speaker and Lid Support.** (Serial No. prefixed "A" or "BA.") Same as (1.) above except uses Lid Support. |
| 37853 | Lid—Moulded lid with antenna and cover, lid support, sections of lid hinges, and hinge pins and springs—less chrome panel. (See note C) |
| 37854 | Panel—Chrome front panel with sections of lid hinges, and hinge pins and springs—less moulded lid and lid support. (See note A) |
| 37811 | Support—Lid support |
| | (3.) **Elliptical Speaker and Lid Support.** (Serial No. prefixed "D" or "BD.") Same as (2.) above except uses Elliptical Speaker. |
| | (4.) **Elliptical or Round Speaker and Lid Support.** (Serial No. prefixed "A," "BA," "D" or "BD.") Same as (2.) or (3.) above except loop and cover assembly is fastened to moulded lid by two rivets, instead of cement. |
| 38212 | Lid—Moulded lid with lid support, sections of lid hinges, hinge springs and pins, and 2 rivets—less chrome panel, and loop and cover assembly |
| 38204 | Loop—Antenna loop and moulded cover (flat) assembly, and 2 rivets |
| 38205 | Catch—Case front cover catch and 2 rivets |
| 38206 | Hinge—Case front cover hinge and rivets |
| 38207 | Connector—One set (2) loop contact connectors |
| 38208 | Rivet—One pkg. (10) rivets to fasten loop in lid |
| | (5.) **Elliptical or Round Speaker and Lid Support.** (Serial No. prefixed "A," "BA," "D" or "BD.") Same as (2.) or (3.) above except loop and cover assembly is fastened to moulded lid by two snap fasteners, instead of cement. |
| 38211 | Lid—Moulded lid with lid support, sections of lid hinges, hinge springs and pins, and 2 snap fasteners —less chrome panel, and loop and cover assembly |
| 38209 | Loop—Antenna loop and moulded cover (flat) assembly, and 2 snap fasteners |
| 38205 | Catch—Case front cover catch and 2 rivets |
| 38206 | Hinge—Case front cover hinge and rivets |
| 38207 | Connector—One set (2) loop contact connectors |
| 38210 | Fastener—One set (2) snap fasteners to fasten loop in lid |
| | (6.) **Revised Stock No. 37855 Lid and Loop as used on (1.) above. (See note C)** |
| 38212 | Lid—Moulded lid (no lid support), with sections of lid hinges, hinge springs and pins, and 2 RIVETS—less chrome panel, and loop and cover assembly |
| 38211 | Lid—Moulded lid (no lid support), with sections of lid hinge, hinge springs and pins, and 2 SNAP FASTENERS—less chrome panel, and loop and cover assembly |
| 38204 | Loop—Antenna loop and moulded cover (flat) assembly, and 2 rivets |
| 38209 | Loop—Antenna loop and moulded cover (flat) assembly, and 2 snap fasteners |
| 38205 | Catch—Case front cover catch and mounting screws |
| 38206 | Hinge—Case front cover hinge and screws |
| 38207 | Connector—One set (2) loop contact connectors |
| 38208 | Rivet—One pkg. (10) rivets to fasten loop in lid |
| 38210 | Fastener—One set (2) snap fasteners to fasten loop in lid |

**— NOTES —**

(A) 37854 Chrome Panel includes two (2) grille assemblies thus making it adaptable to all above productions using either round or elliptical speaker.

(B) 37855 Moulded Lid and Loop Assembly — Future orders for this item will be supplied with loop fastened in lid with either 2 rivets, or 2 snap fasteners. Repair parts for this new assembly are listed under "Revised Lid for (1)" above.

(C) 37853 Moulded Lid and Loop Assembly — Future orders for this item will be supplied with loop fastened in lid with either 2 rivets, or 2 snap fasteners. Repair parts for this new assembly are listed under (4) or (5) above, depending on type of fastening used.

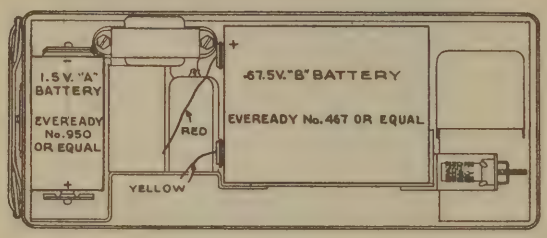
(D) 38211 and 38212 Moulded Lids less Loop Assemblies—These 2 items (one with rivets, and one with snap fasteners) will be supplied with lid support not assembled to lid thus making them adaptable to models with either chrome panels of any of the above productions.

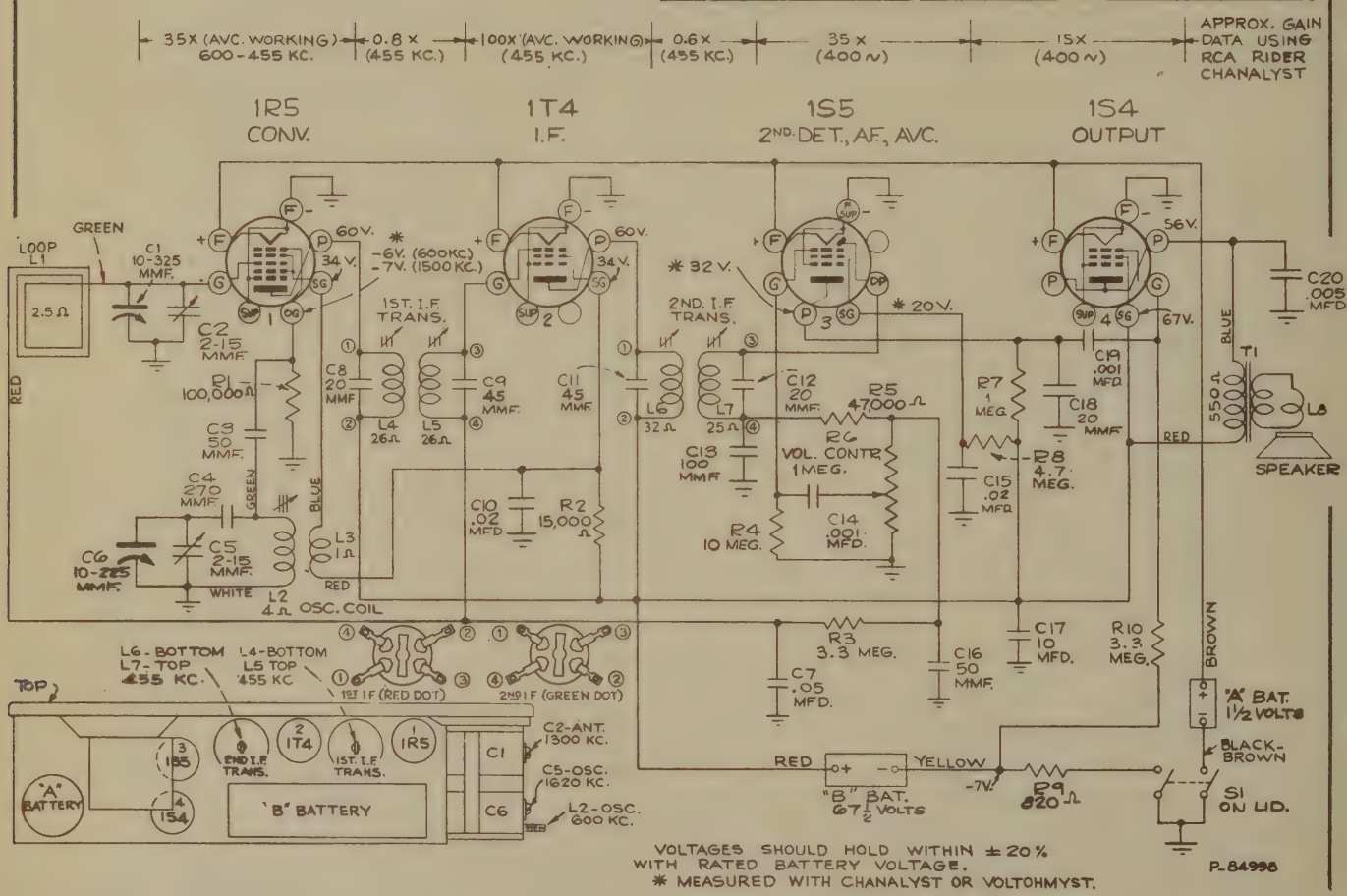
# Alignment Procedure

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | Tuning condenser stator (ant.) in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | L7, L6, L5, L4 (2nd and 1st I-F transformers) |
| 2 | Radiated signal 1,620 kc | 1,620 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | Radiated signal 1,300 kc | 1,300 kc | 1,300 kc signal | C2 (antenna) |
| 4 | Radiated signal 600 kc | 600 kc | 600 kc | L2 (osc.) |
| 5 | Repeat steps 2, 3 and 4. | | | |




## Replacing Lid or Front Panel:

When the molded lid (which contains the loop antenna), or the chrome front panel requires replacement, it is not necessary to replace the complete assembly of lid and front panel, as either one may be replaced separately in a few minutes by taking out the hinge pins as described below.

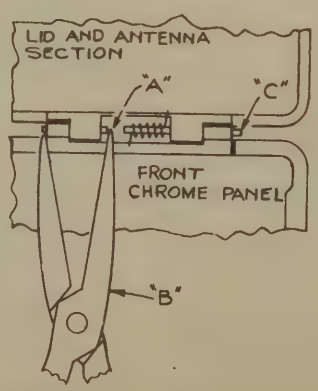
First remove the three self-tapping screws that hold the chassis in the center case, and remove the case. Unsolder the leads from the loop lugs.

(a) With lid closed, cut hinge pins at point "A" with sharp cutters.

(b) Start removal of pin sections as shown, using long-nose pliers.

(c) Grasp end of pin section with long-nose pliers and pull out of hinge.

(d) Install new lid, or new front panel, using the replacement hinge pins and springs that are provided with replacement lids and panels. Arrange springs as shown. Apply a small amount of "Thermoplastic Cement" (G.E. ZV 5057) near outer end of each pin to insure tight and permanent fit.




*Replacing Lid or Chrome Panel*

## Low Output:

Low output on BP-10 Models that have elliptical speaker may be due to the 1S4 output tube lying close to the speaker magnet, causing disturbance of the space charge in the tube. To remedy this condition, install a felt pad between the speaker frame and the tube to keep the tube upright in its socket and spaced away from the magnet.

## Loose Control Knobs:

If for any reason either the tuning or volume control knob on Model BP-10 should become loose on its shaft, it may be rigidly mounted in the following manner:

(a) Remove the loose control knob from its shaft and scrape off the old cement from both shaft and control knob.

(b) Apply a generous even coating of a good cement to the shaft region which is to engage the knob. G.E. Thermoplastic cement, ZV-5057, is excellent for this purpose; it is a green fluid, easily thinned with acetone if necessary.

(c) Allow the cement on the shaft to air-dry, to evaporate any acetone present.

(d) Apply a small amount of heat to the shaft, sufficient to soften the cement.

(e) Mount knob on shaft while cement is still soft, and allow a few minutes for drying.

# Five-Tube, Single-Band, A-C, Superheterodyne Victrola

# MODEL U-10

## Chassis No. RC-418B

## Electrical and Mechanical Specifications

FREQUENCY RANGE
Standard Broadcast and one Police Band ..... 540-1,720 kc
INTERMEDIATE FREQUENCY ..... 455 kc
NUMBER OF PUSH BUTTONS ..... Six

TUBE COMPLEMENT
(1) RCA-6SA7.. 1st Detector—Oscillator
(2) RCA-6SK7..... I-F Amplifier
(3) RCA-6SQ7.. 2nd Det., A.V.C., A.F.
(4) RCA-6F6-G..... Power Output
(5) RCA-5Y3-G..... Rectifier

PILOT LAMP (1)..... Mazda No. 51, 7.5 volts, 0.2 amp.

LOUDSPEAKER (RL-78-6)
Type..... 5-inch electrodynamic
Voice Coil Impedance..... 3.4 ohms at 400 cycles

PICKUP..... Crystal
Pickup Impedance. 0.1 meg. at 1,000 cycles

POWER OUTPUT RATING
Undistorted..... 2.5 watts
Maximum..... 4.5 watts

POWER SUPPLY RATINGS
A-6..... 105-125 volts, 60 cycles
A-5..... 105-125 volts, 50 cycles
C-6... 105-125, 200-250 volts, 60 cycles
C-5... 105-125, 200-250 volts, 50 cycles

POWER CONSUMPTION ..... 100 watts

PHONO MECHANISM . Self starting motor, edge-driven turntable, adjustable speed

## Miscellaneous Service Data

PHONOGRAPH MECHANISM.—

The phonograph motor is self-starting and operates the turntable through friction drive between the motor spindle and the rubber tire on the underside of the turntable.

The rubber driving tire on the turntable should never be removed since it is grounded in to be concentric with the spindle. If replacement is required, the entire turntable should be replaced.

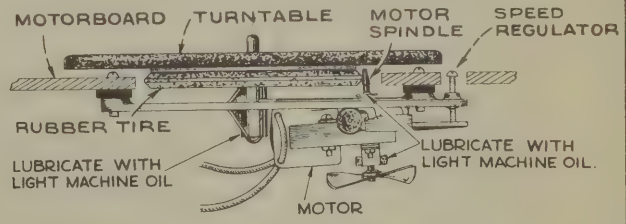
The speed regulator raises and lowers the motor. This changes the driving ratio between the motor and the turntable due to the motor spindle being conical in shape. It is important to adjust this regulator for a turntable speed of 78 r.p.m. WHILE PLAYING A 10-INCH RECORD WITH THE NEEDLE APPROXIMATELY ONE INCH FROM THE OUTER EDGE OF THE RECORD.

Lubrication.—The motor should be lubricated as follows: Place a few drops of S.A.E. 20 (or equivalent) on the turntable spindle and saturate the oil retaining felt pads on the motor shaft with S.A.E. 10 oil. This oiling process should be repeated once or twice a year. CAUTION.—THE MOTOR DRIVE SPINDLE AND RUBBER DRIVING TIRE ON THE TURNTABLE MUST BE KEPT CLEAN AND ENTIRELY FREE FROM OIL AND GREASE AT ALL TIMES.

POWER-VOLUME CONTROL — THREE PURPOSE TONE CONTROL — TUNING CONTROL

POWER LINE ANTENNA.—

This instrument is equipped with a built-in power line antenna. To use this antenna, the link on the antenna terminal board should be connected between "A" and "L," thus connecting the antenna input of the receiver through a capacitor to the power line. Reversing the power plug may inprove reception. If an external antenna is used, it should be connected to "A," a ground connection made to "G," and the link removed.




## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.
2. Turn the accessory switch to "Radio" position and accurately tune in the station for which the first button is to be set.
3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.
4. Replace the push-button on its shaft.
5. Proceed in a similar manner for the remainder of the push-buttons.
6. Insert the station marker tabs in the recesses above the push-buttons.

**Additional Replacement Parts:**

Stock No.
34758 Bushing—1 rubber and 1 metal, for pickup arm.....
32610 Rest—Rubber rest for pickup.....
33735 Screw—Push-button lock screw ....
30585 Spring—Drive cord spring.....

Under "Motor Assemblies" add:
32654 Ball—For turntable bearing.....

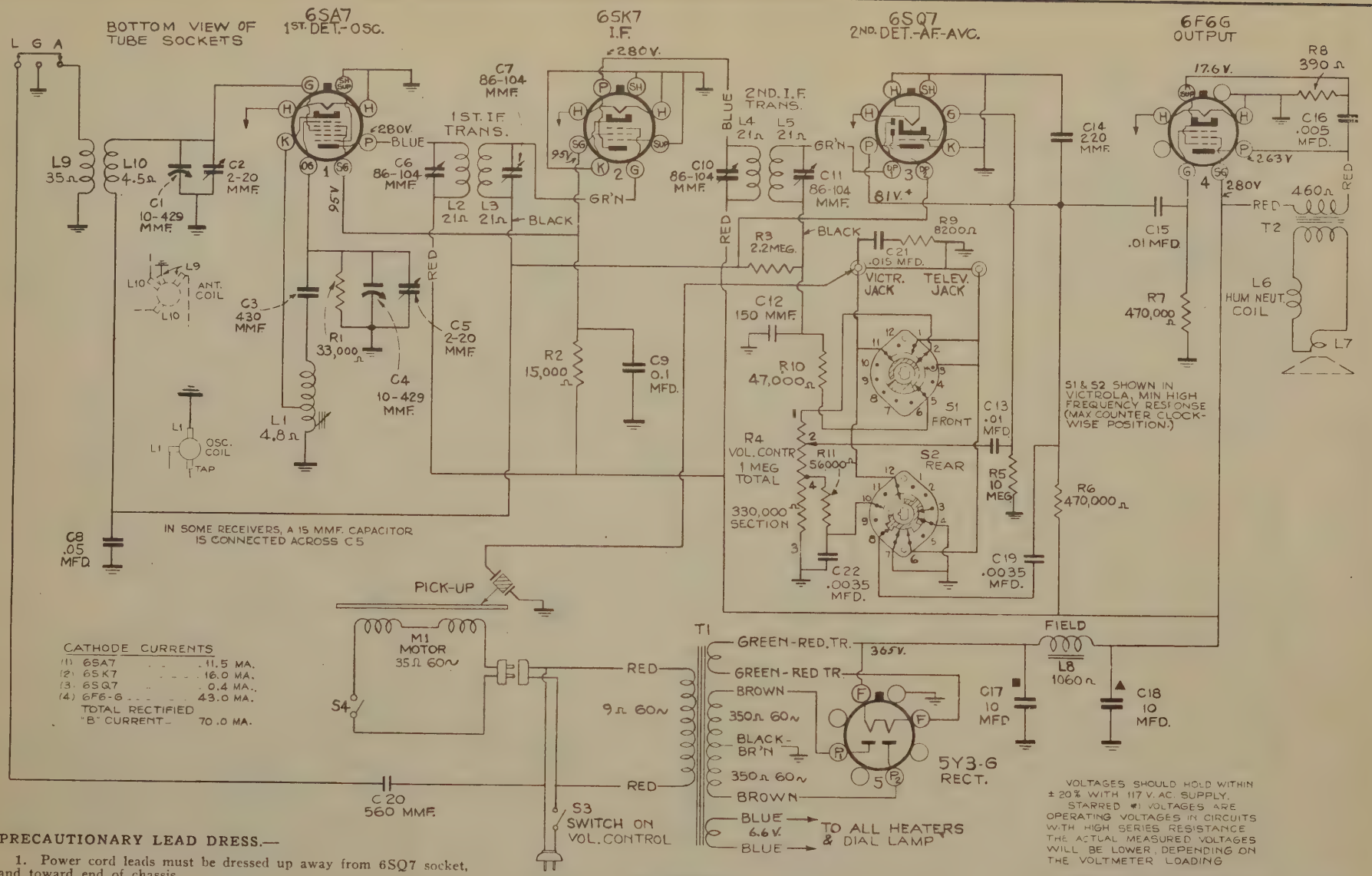
**Turntable Assembly Stock No. 33899:**

The turntable and tire assembly Stock No. 33899 is superseded by:
Stock No. 37971—Turntable and spindle, less tire
Stock No. 37872—Tire only

**Turntable Wobble:**

Turntables (Stock No. 33899) found to have excessive wobble (vertical run-out) may be trued-up in the following manner:

(a) Obtain a motor bearing, Stock No. 31046 (used in R93-B) and clamp same securely in a vise.
(b) Place turntable spindle in this bearing and make sure that turntable spins freely.
(c) With turntable spinning, the high side can readily be determined by use of a piece of chalk carefully lowered so that it just touches the high spot of the turntable, leaving a mark.
(d) With both hands grasp the rim of the turntable, thumbs on top and index fingers underneath turntable at the center of the chalk mark.
(e) Apply a moderate amount of pressure in a downward direction at right angle to the jaws of the vise.
(f) Spin turntable again and if still running out, repeat operation mentioned under (c), continuing by trial until turntable runs true.



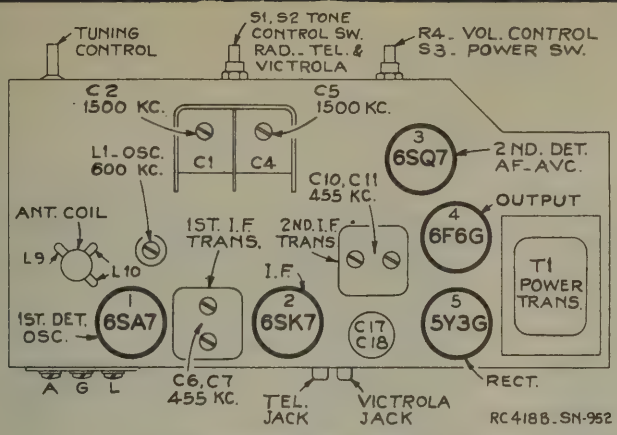

**PRECAUTIONARY LEAD DRESS.—**

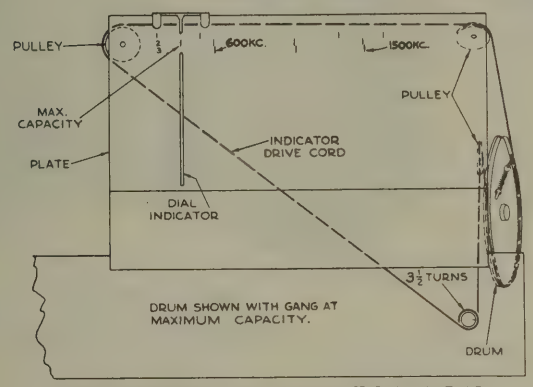
1. Power cord leads must be dressed up away from 6SQ7 socket, and toward end of chassis.
2. Green lead 2nd I.F. to 6SQ7 must be dressed against base.
3. Blue lead 2nd I.F. to 6SK7 must be dressed close to base.
4. Green and blue leads from 1st I.F. transformer must be dressed close to base.
5. Red lead from "L" terminal on antenna board to 5Y3G socket must be dressed against base.
6. Green lead from gang to 6SA7 socket must be dressed toward side apron away from other parts.

**2nd Production:**

The following revisions were made in the 2nd production of Model U-10:

(a) C8 changed from .05 mfd. to .01 mfd. (Stock No. 4937).
(b) C22 changed from .0035 mfd. to .0015 mfd. (Stock No. 33806).
(c) R11 changed from 56,000 ohms to 150,000 ohms (Stock No. 13698).
(d) R3 changed from 2.2 megs. to 5.6 megs. (Stock No. 11668).
(e) R4 (volume control) changed from 1 meg. to 2 megs., tapped at 500,000 ohms (Stock No. 34796).
(f) R12, 820,000 ohms (Stock No. 30963). added from bottom end of R10 to chassis.
(g) C23, .005 mfd. (Stock No. 33584), added between R10 and contact 5 on S1.
(h) Contact 5 on S1 connected to contact 3 on S2.
(i) DP2 on 6SQ7 was connected to left-hand end of R3. This connection is removed and DP2 is grounded.




DIAL MECHANISM AND CALIBRATION MARKS.

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Antenna Terminal | 455 kc | Quiet Point between 1,720-1,500 kc | C10 and C11 (2nd I-F trans.) |
| 2 | | | | C6 and C7 (1st I-F trans.) |
| 3 | Ant. terminal in series with 200 mmfd. | 1,500 kc | 1,500 kc calibration mark | C5 (osc.) C2 (ant.) |
| 4 | | 600 kc | 600 kc calibration mark | L1 (osc.)* |
| 5 | Repeat step 3 | | | |

Note.—Oscillator tracks above signal.

* Rock gang condenser slightly while adjusting L1.

## Replacement Parts

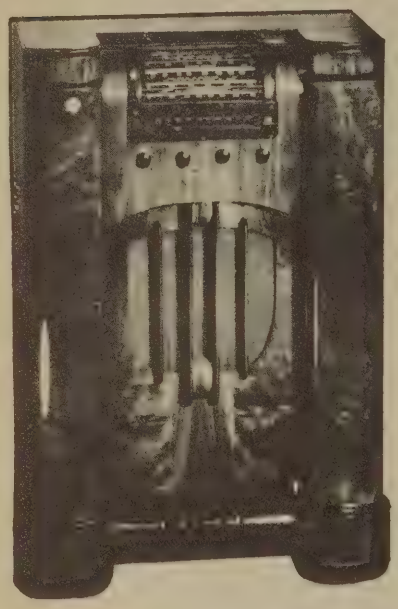
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

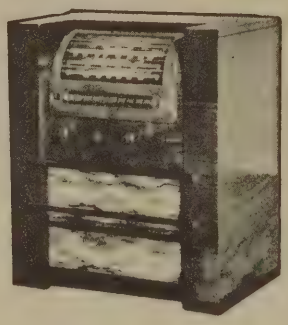
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-418B)** |
| 33719 | Belt—Tuning unit push arm belt |
| 33718 | Board—Antenna-Ground terminal board |
| 12725 | Capacitor—150 mmfd. (C12) |
| 12694 | Capacitor—220 mmfd. (C14) |
| 32599 | Capacitor—430 mmfd. (C3) |
| 12537 | Capacitor—560 mmfd. (C20) |
| 30303 | Capacitor—.0035 mfd. (C19, C22) |
| 33584 | Capacitor—.005 mfd. (C16) |
| 4937 | Capacitor—.01 mfd. (C15) |
| 14393 | Capacitor—.01 mfd. (C13) |
| 11315 | Capacitor—.015 mfd. (C21) |
| 32787 | Capacitor—.05 mfd. (C8) |
| 4839 | Capacitor—0.1 mfd. (C9) |
| 33724 | Coil—Oscillator coil |
| 33775 | Coil—Antenna coil (L9, L10) |
| 32342 | Condenser—Electrolytic, 2 sections 10 mfd. each |
| 33776 | Control—Volume control and power switch (R4, S3) |
| 32634 | Cord—Drive cord |
| 33633 | Indicator—Dial scale pointer |
| 11765 | Lamp—Dial lamp (Mazda 51) |
| 33431 | Link—Antenna link |
| 33727 | Plate—Dial plate assembly |
| 30868 | Plug—2 contact female plug for speaker cable |
| 31388 | Resistor—390 ohms, 1 watt (R8) |
| 14075 | Resistor—8,200 ohms, ½ watt (R9) |
| 33489 | Resistor—15,000 ohms, 2½ watts (R2) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12412 | Resistor—47,000 ohms, ½ watt (R10) |
| 12286 | Resistor—56,000 ohms, ½ watt (R11) |
| 12285 | Resistor—470,000 ohms, ½ watt (R6, R7) |
| 12679 | Resistor—2.2 megohms, ½ watt (R3) |
| 13601 | Resistor—10 megohms, ½ watt (R5) |
| 33725 | Shaft—Tuning knob shaft |
| 31319 | Socket—Tube socket |
| 31364 | Socket—Dial lamp socket |
| 31365 | Socket—Lamp socket |
| 33514 | Socket—Phonograph input socket |
| 33720 | Spring—Push arm return spring |
| 33894 | Switch—Tone, Radio-Phono, or Television switch (S1, S2) |
| 33722 | Transformer—First i-f transformer |
| 33895 | Transformer—Second i-f transformer (L4, L5, C10, C11) |
| 33619 | Transformer—Power transformer 105-120 volts, 25-60 cycles (T1) |
| 33112 | Transformer—Power transformer 105-120 volts, 50-60 cycle (T1) |
| 31575 | Transformer—Power transformer 110-220 volts, 60 cycle |
| 33726 | Washer—"C" washer for tuning shaft |
| | **MOTOR ASSEMBLIES** |
| 33897 | Base—Motor base and ball assembled |
| 33902 | Motor—Complete motor 105-125 volts, 60 cycle (M1) |
| 34496 | Motor—Complete motor 105-125 volts, 50 cycle (M1) |
| 33896 | Mounting—Motor cradle mounting hardware and retainer |
| | **PICKUP ASSEMBLIES** |
| 33591 | Arm—Pickup arm—top shell only |
| 33898 | Base—Pivot arm and base assembly |
| 33122 | Crystal—Pickup crystal cartridge complete |
| | **SPEAKER ASSEMBLIES (RL-78-6)** |
| 32907 | Cap—Cone center dust cap |
| 32906 | Coil—Hum neutralizing coil (L6) |
| 33601 | Coil—Speaker field coil (L8) |
| 32904 | Cone—Speaker cone and voice coil (L7) |
| 32905 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33731 | Button—Push button complete |
| 31456 | Cover—Protective cover for push button markers |
| 32625 | Cup—Needle cup |
| 33729 | Dial—Glass dial scale |
| 33637 | Escutcheon—Glass dial escutcheon less scale and push buttons |
| 33972 | Escutcheon—Motor switch escutcheon |
| 13085 | Hinge—Lid hinge |
| 30863 | Knob—Tuning, volume control and power switch knob |
| 33942 | Knob—Tone control knob (white dot) |
| 33973 | Marker—Push button markers |
| 33901 | Mounting—Motor mounting hardware |
| 30870 | Plug—2 prong male plug for motor leads |
| 31048 | Plug—2 conductor pin plug for phonograph input |
| 30900 | Spring—Push button and knob retaining spring |
| 31164 | Support—Lid support |
| 33900 | Switch—Phono motor switch (S4) |
| 33899 | Turntable—Turntable complete with rubber tire and spindle |

# MODELS 11Q4, 11QK, and 11QU

Chassis No. RC-335-C RC-335-C RC-335-E

## Eleven-Tube, Four-Band, Electric-Tuning, A-C, Radios and Victrola





**Model 11Q4**
TABLE MODEL
8-inch Speaker

←

**Model 11QK**
CONSOLE
12-inch Speaker

**Model 11QU**
AUTOMATIC VICTROLA
12-inch Speaker

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave ("X" Band) | 150-400 kc (2,000-750 m) |
| Medium Wave ("A" Band) | 545-1,650 kc (550-182 m) |
| Short Wave 1 ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave 2 ("C" Band) | 7.0-22 mc (42.8-13.6 m) |
| Intermediate Frequency | 455 kc |

RADIOTRON COMPLEMENT

| | | | |
|---|---|---|---|
| (1) RCA-6K7 | R-F Amplifier | (6) RCA-6Q7 | 2nd-Det., A.V.C., and Audio |
| (2) RCA-6L7 | 1st-Detector | (7) RCA-6F5 | Inverter |
| (3) RCA-6J7 | Oscillator | (8) RCA-6F6-G | Power Output |
| (4) RCA-6K7 | 1st I-F Amplifier | (9) RCA-6F6-G | Power Output |
| (5) RCA-6K7 | 2nd I-F Amplifier | (10) RCA-6U5 | Tuning Tube |
| | | (11) RCA-5T4 | Full-Wave Rectifier |

| | |
|---|---|
| Pilot Lamps (11Q4 and 11QK) | One Mazda 47, 6-8 volts, .15 amp.; Two Mazda 44, 6.3 volts, .25 amp. |
| Pilot Lamps (11QU) | One Mazda 47, 6-8 volts, .15 amp.; Three Mazda 44, 6.3 volts, .25 amp. |

POWER OUTPUT

| | | | |
|---|---|---|---|
| Undistorted | 10 watts | Maximum | 12 watts |

| LOUDSPEAKER (Electrodynamic) | Model 11Q4 | Model 11QK | Model 11QU |
|---|---|---|---|
| Diameter (inches) | 8 | 12 | 12 |
| Voice-Coil Impedance at 400 cycles (ohms) | 2.2 | 2.2 | 2.2 |

| POWER SUPPLY RATINGS | Models 11Q4, 11QK | Model 11QU |
|---|---|---|
| Rating C — 105-130/140-160/195-250 volts, 50-60 cycles | 120 watts | 145 watts (total)<br>120 watts (radio) |

PHONOGRAPH (Model 11QU)

| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch or seven 12-inch |
| Turntable Speed | 78 r.p.m. (adjustable) |
| Type Pickup | Crystal |
| Pickup Impedance at 1,000 cycles | 100,000 ohms |

REFER TO INDEX FOR DATA ON ELECTRIC TUNING AND AUTOMATIC RECORD CHANGER

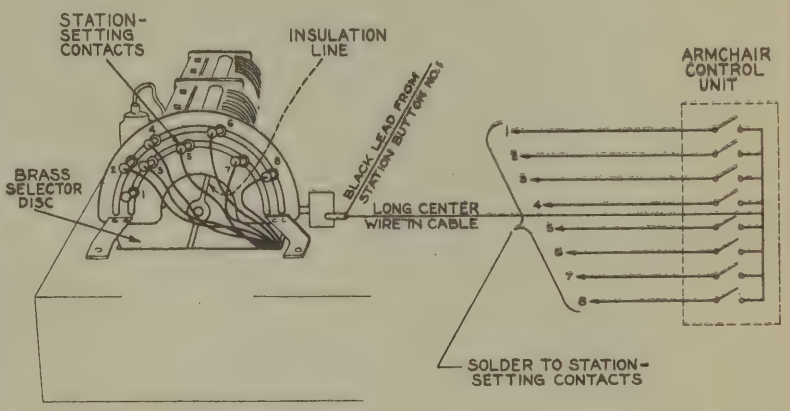
# ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go completely out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

*Station-Setting Contacts and Selector Disc*

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.

| Station Button | Color of Lead To Station-Setting Contact |
|---|---|
| No. 1 | Black |
| No. 2 | Brown |
| No. 3 | Blue |
| No. 4 | Green |
| No. 5 | Red |
| No. 6 | Red-black |
| No. 7 | Brown-black |
| No. 8 | Red-yellow |




# Miscellaneous Service Data

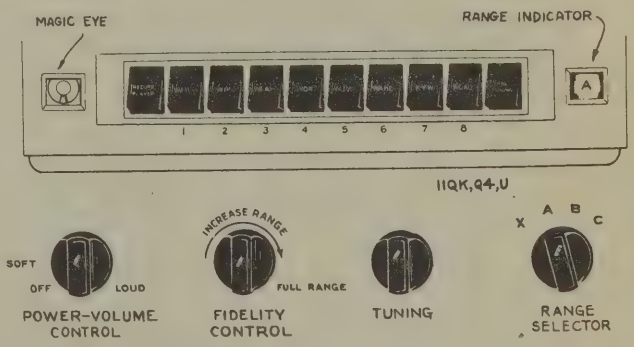
**Plug for Extension Loudspeaker.**—A two-contact female socket, equipped with a male plug, is connected across the secondary of the output transformer on the loudspeaker to facilitate the connection of an extension loudspeaker if desired.

**A permanent-magnet dynamic speaker, with voice-coil impedance of not less than 2 ohms is recommended:** With a 2-ohm voice coil, the extension speaker will receive approximately half the power output of the receiver; with a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased.

A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.

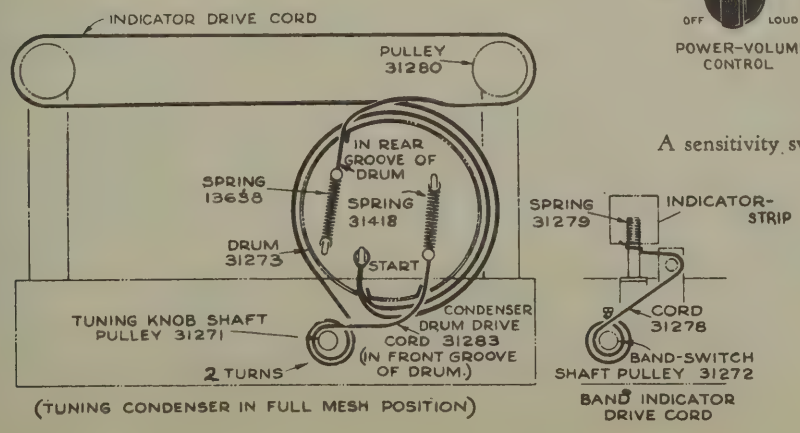
**Precautionary Lead Dress.—**

1. Dress grid lead of 6K7 R-F away from detector section of gang to prevent oscillation.
2. Observe the following points to permit alignment of "C" band at 20 mc: C10, C11, and C12 from oscillator section of gang must have short leads and be dressed away from the chassis and from the range-switch shield.
3. The ground braids from gang condenser must be flexible to prevent microphonic howling.
4. R10 and R11 should be soldered as close as possible to "A" lug on 3rd I-F transformer.
5. Power cord leads must be dressed away from the volume-control wiring.



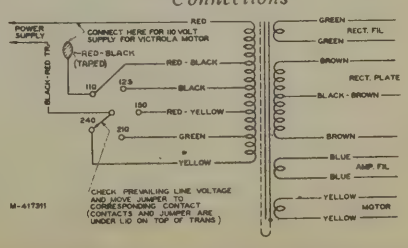

*Location of Controls*

A sensitivity switch is mounted at the rear of the receiver.




*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

*Universal Power Transformer Connections*



# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

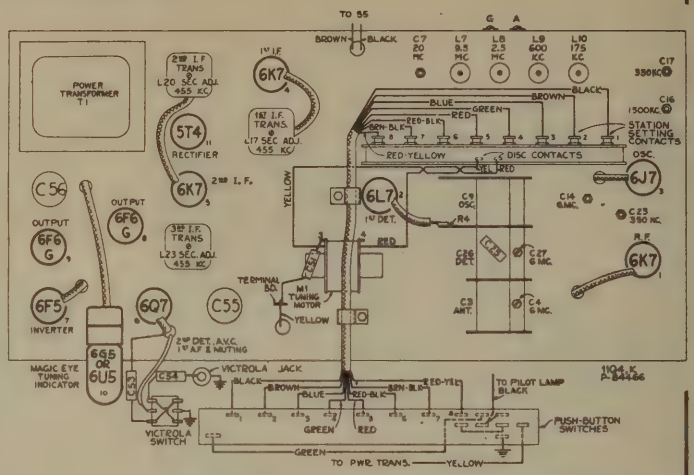
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver ground terminal (G), and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 0° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The surface of the drum must be flush with the end of the gang-condenser shaft. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.




*Top View, Showing Location of Tubes and Trimmers*

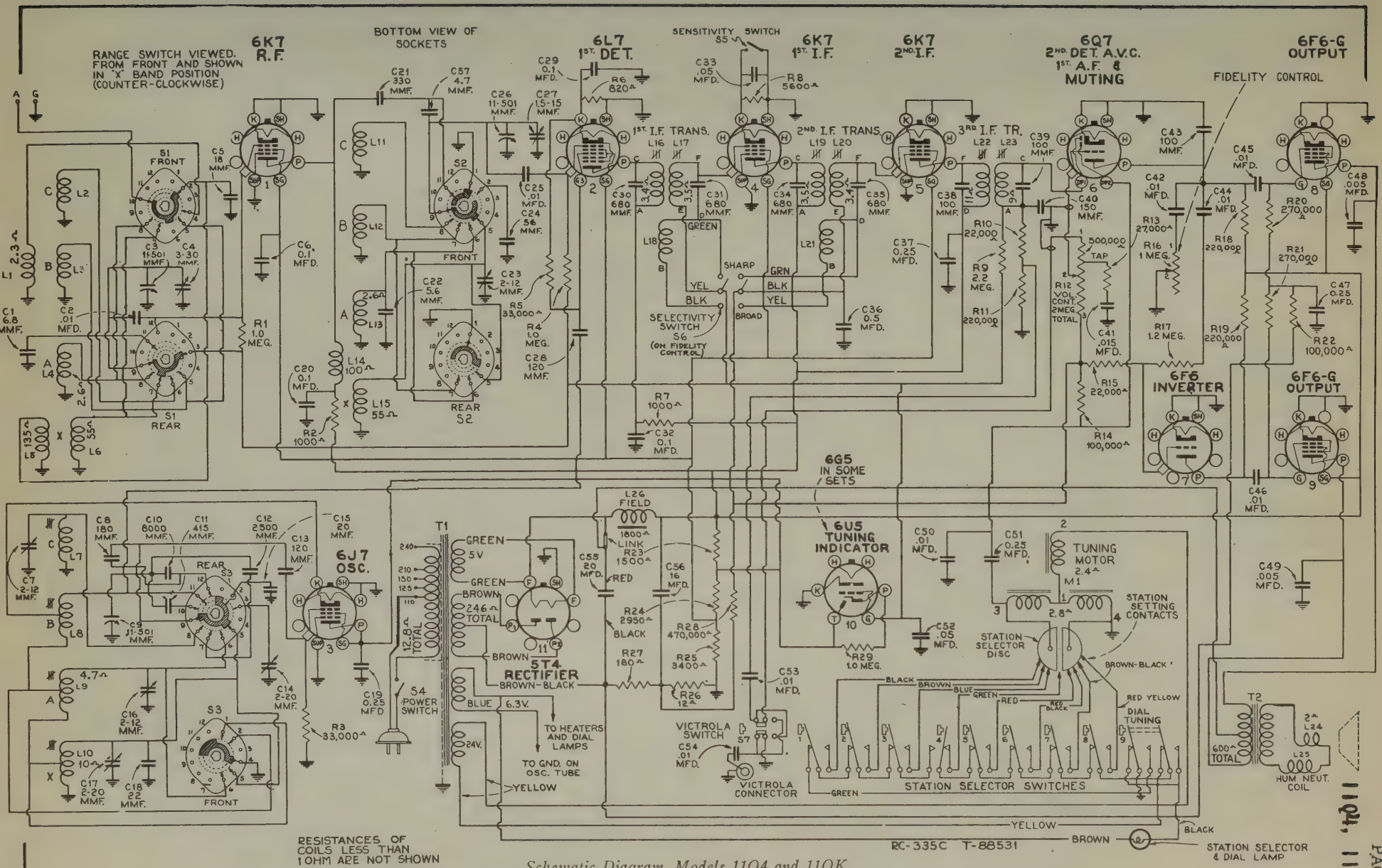
**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark on the dial scales and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following to obtain maximum output |
|---|---|---|---|---|
| 1 | Turn fidelity control counter-clockwise (sharp), and sensitivity switch at minimum (open). | | | |
| 2 | 6K7 2nd I-F grid cap in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L22 and L23 (3rd I-F Trans.) |
| 3 | 6K7 1st I-F grid cap in series with .01 mfd. | | | L19 and L20 (2nd I-F Trans.) |
| 4 | 6L7 1st-det. grid cap in series with .01 mfd. | | | L16 and L17 (1st I-F Trans.) |
| 5 | Turn fidelity switch clockwise (broad) and check I-F response which should be a double-peaked curve. Leave fidelity counter-clockwise (sharp) for all of the following steps. | | | |
| 6 | Antennna Terminal in series with 300 ohms | 2.5 mc | 2.5 mc ("B") 24½° | L8 (osc.) |
| 7 | | 6.0 mc | 6.0 mc ("B") 147° | C14 (osc.) Use minimum capacity peak<br>C27 (det.) Use maximum capacity peak<br>C4 (ant.) Use maximum capacity peak* |
| 8 | | 9.5 mc | 9.5 mc ("C") 55° | L7 (osc.) |
| 9 | | 20 mc | 20 mc ("C") 153° | C7 (osc.) Use minimum capacity peak* |
| 10 | Antennna Terminal in series with 200 mmf. | 600 kc | 600 kc ("A") 24½° | L9 (osc.) Rock gang |
| 11 | | 1,500 kc | 1,500 kc ("A") 151½° | C16 (osc.) |
| 12 | Repeat steps 10 and 11. | | | |
| 13 | Antennna Terminal in series with 200 mmf. | 175 kc | 175 kc ("X") 53½° | L10 (osc.) |
| 14 | | 350 kc | 350 kc ("X") 145½° | C17 (osc.)<br>C23 (det.) |
| 15 | Repeat steps 13 and 14. | | | |

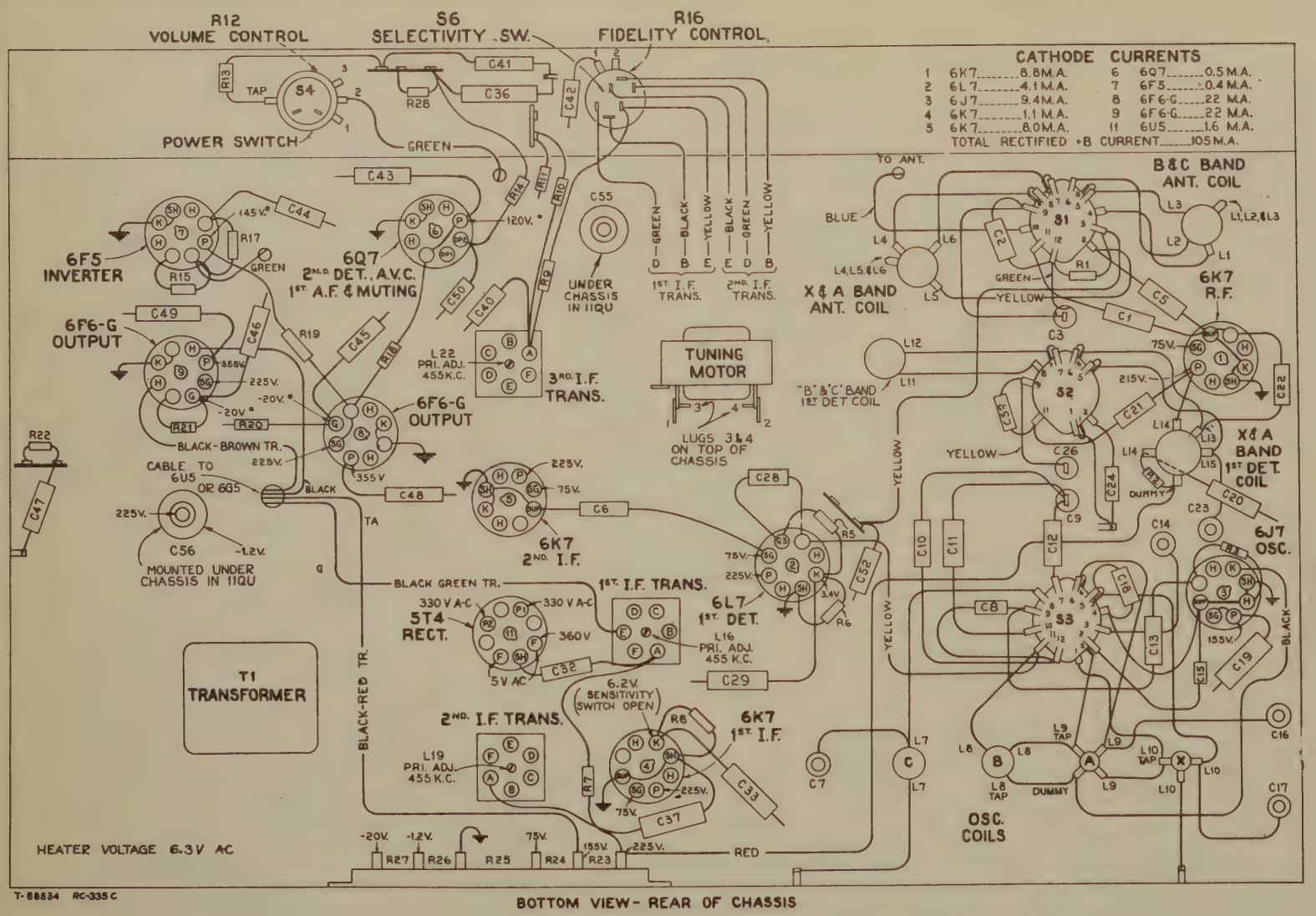
* Check to determine that the oscillator trimmer has been adjusted to the correct peak by tuning the receiver approximately 910 kc lower, where a weaker signal should be received.

NOTE: The oscillator tracks 455 kc above the signal on all bands.




*Schematic Diagram, Models 11Q4 and 11QK*

**Model 11QU is the same, except for the Victrola connections, which are shown in a separate diagram**



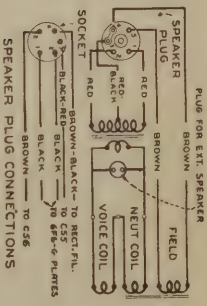

*R-F Wiring Diagram and Socket Voltages, Models 11Q4 and 11QK*

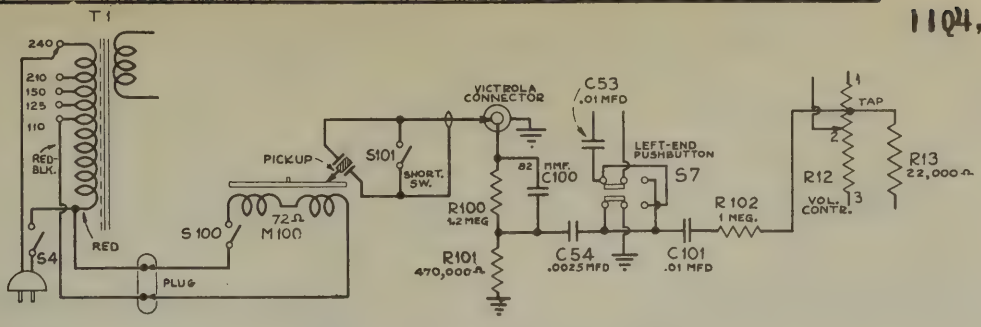
**Model 11QU is the same, except for the Victrola connections, which are shown in a separate diagram**

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at minimum (opened), and volume control at minimum. Values should hold within approximately ±20% with 110-volt a-c supply

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

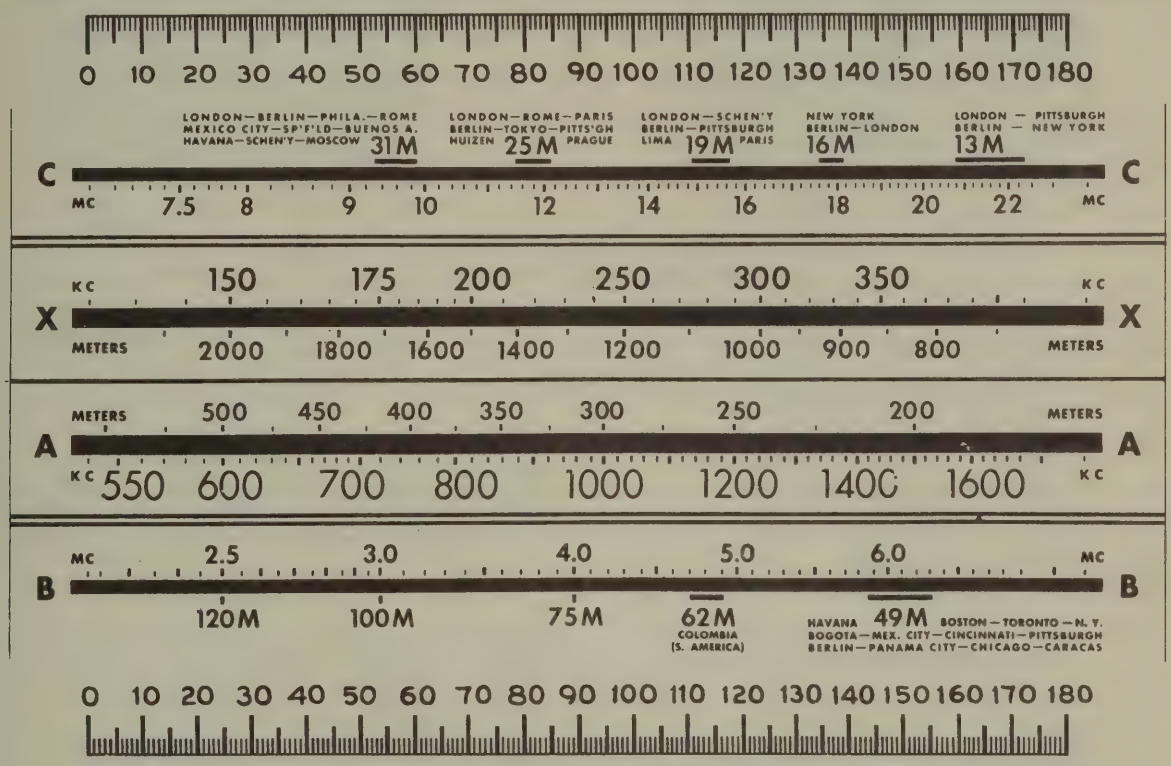
## *Connections of Loudspeaker and Cable*






*Model 11QU Victrola Input Circuit*

**Except for the changes shown above, the schematic diagram of Model 11QU is the same as Models 11Q4 and 11QK**


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
LONDON—BERLIN—PHILA.—ROME MEXICO CITY—SP'F'LD—BUENOS A. HAVANA—SCHEN'Y—MOSCOW 31M
LONDON—ROME—PARIS BERLIN—TOKYO—PITTS'GH HUIZEN 25M PRAGUE
LONDON—SCHEN'Y BERLIN—PITTSBURGH LIMA 19M PARIS
NEW YORK BERLIN—LONDON 16M
LONDON — PITTSBURGH BERLIN — NEW YORK 13M
C
MC 7.5 8 9 10 12 14 16 18 20 22 MC
KC 150 175 200 250 300 350 KC
X
METERS 2000 1800 1600 1400 1200 1000 900 800 METERS
METERS 500 450 400 350 300 250 200 METERS
A
KC 550 600 700 800 1000 1200 1400 1600 KC
MC 2.5 3.0 4.0 5.0 6.0 MC
B
120M 100M 75M 62M COLOMBIA (S. AMERICA) 49M HAVANA BOSTON—TORONTO—N. Y. BOGOTA—MEX. CITY—CINCINNATI—PITTSBURGH BERLIN—PANAMA CITY—CHICAGO—CARACAS
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 31492 | Bearing—Variable condenser motor rotor adjustment—less bracket and cup assembly—Model 11QU |
| 31863 | Board—Antenna and ground terminal board—Models 11Q4 and 11QK only |
| 31867 | Board—Antenna and ground terminal board—Model 11QU only |
| 32232 | Body—Comprising 1 plunger body and 1 body spring |
| 31276 | Bracket—Band indicator mounting, complete except less band indicating strip, cord, and tension spring |
| 31491 | Bracket—Bracket and cup assembly for variable condenser motor rotor adjustment bearing—Model 11QU |
| 31282 | Bracket—Magic Eye mounting bracket and clip |
| 30766 | Cap—Rubber cap for Magic Eye |
| 12714 | Capacitor—Trimmer 2-12 mmfd. (C7, C16, C23) |
| 12884 | Capacitor—Trimmer 2-20 mmfd. (C14, C17) |
| 14392 | Capacitor—4.7 mmfd. (C57) |
| 12814 | Capacitor—5.6 mmfd. (C22) |
| 14079 | Capacitor—6.8 mmfd. (C1) |
| 12722 | Capacitor—18 mmfd. (C5) |
| 31871 | Capacitor—20 mmfd. (C15) |
| 31868 | Capacitor—22 mmfd. (C18) |
| 12723 | Capacitor—56 mmfd. (C24) |
| 12813 | Capacitor—82 mmfd. (C100) — Model 11QU only |
| 31270 | Capacitor—100 mmfd. (C38, C39) |
| 12720 | Capacitor—100 mmfd. (C43) |
| 12724 | Capacitor—120 mmfd. (C13, C28) |
| 12725 | Capacitor—150 mmfd. (C40) |
| 31869 | Capacitor—180 mmfd. (C8) |
| 12952 | Capacitor—330 mmfd. (C21) |
| 31870 | Capacitor—415 mmfd. (C14) |
| 31552 | Capacitor—680 mmfd. (C30, C31, C34, C35) |
| 31703 | Capacitor—2,500 mmfd. (C12) |
| 31704 | Capacitor—8,000 mmfd. (C10) |
| 5107 | Capacitor—.0025 mfd. (C54) — Model 11QU only |
| 4838 | Capacitor—.005 mfd. (C48, C49) |
| 14393 | Capacitor—.01 mfd. (C2, C25, C42, C44, C45, C46, C50, C53, C54, C101)—(C54—Models 11Q4 and 11QK only, C101—Model 11QU only) |
| 11315 | Capacitor—.015 mfd. (C41) |
| 4886 | Capacitor—.05 mfd. (C52, C33) |
| 4839 | Capacitor—0.1 mfd. (C6, C20, C29, C32) |
| 12484 | Capacitor—0.25 mfd. (C19, C37, C47, C51) |
| 30867 | Capacitor—0.5 mfd. (C36) |
| 5212 | Capacitor—16 mfd. (C56)—Models 11Q4 and 11QK only |
| 31866 | Capacitor—16 mfd. (C56)—Model 11QU only |
| 31495 | Capacitor—20 mfd. (C55) |
| 31237 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft |
| 31257 | Coil—"A" band oscillator coil (L9) |
| 31690 | Coil—"B" band oscillator coil (L8) |
| 31839 | Coil—"B" and "C" bands antenna coil (L1, L2, L3) |

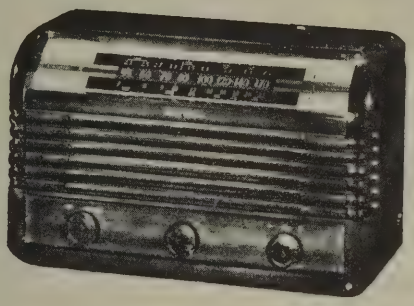
# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31841 | Coil—"B" and "C" bands r-f coil (L11, L12) |
| 31255 | Coil—"C" band oscillator coil (L7) |
| 31837 | Coil—"X" band oscillator coil (L10) |
| 31838 | Coil—"X" and "A" bands antenna coil (L4, L5, L6) |
| 31840 | Coil—"X" and "A" bands r-f coil (L13, L14, L15) |
| 31842 | Condenser—3-gang variable tuning condenser (C3, C4, C9, C26, C27) |
| 31231 | Contact—Contact tip for selector plunger |
| 31345 | Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip |
| 31344 | Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip |
| 31278 | Cord—Band indicator drive cord |
| 31281 | Cord—Indicator pointer drive cord—Models 11Q4 and 11QK only |
| 31554 | Cord—Indicator pointer drive cord—Model 11QU only |
| 31283 | Cord—Variable condenser drum drive cord |
| 31273 | Drum—Variable condenser drive cord drum |
| 31546 | Fidelity control and selectivity switch (R16, S6) |
| 31240 | Flywheel—Variable condenser drive motor flywheel |
| 31238 | Gear—Variable condenser intermediate drive gear and pinion gear |
| 31239 | Gear—Variable condenser knob shaft drive gear and hub |
| 31819 | Indicator—Band indicator strip—Models 11Q4 and 11QK only |
| 31862 | Indicator—Band indicator strip—Model 11QU only |
| 11891 | Lamp—Dial lamp or pilot lamp |
| 31480 | Lamp—Electric Tuning adjustment indicator lamp |
| 31243 | Leather—Friction leather for flywheel |
| 31346 | Lockplate—Push button switch lockplate—comprising 10-contact locks in one strip |
| 31235 | Motor—Variable condenser drive motor (M1) |
| 14028 | Nut—Jamb nut for trimmer Stock Nos. 12714 and 12884 |
| 31228 | Plate—Selector contact plate—less plungers |
| 31227 | Plate—Selector mounting plate and studs—mounts on rear of variable condenser |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 31272 | Pulley—Range switch pulley |
| 31271 | Pulley—Station selector knob shaft pulley |
| 30868 | Plug—2-contact female plug for motor power cable |
| 12493 | Plug—5-contact female plug for speaker cable |
| 31250 | Resistor—Voltage divider comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 182 ohm sections (R23, R24, R25, R26, R27) |
| 11895 | Resistor—820 ohms, 1/10 watt (R6) |
| 14837 | Resistor—1,000 ohms, 1/10 watt (R2, R7) |
| 31789 | Resistor—5,600 ohms, 1/10 watt (R8) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R15) |
| 13998 | Resistor—22,000 ohms, ½ watt (R10, R13)—R13 Model 11QU only |
| 12738 | Resistor—27,000 ohms, ½ watt (R13)—Models 11Q4 and 11QK only |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R3, R5) |
| 11281 | Resistor—100,000 ohms, 1/10 watt (R14, R22) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R18, R19) |
| 12264 | Resistor—220,000 ohms, ½ watt (R11) |
| 11453 | Resistor—270,000 ohms, 1/10 watt (R20, R21) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R28) |
| 12285 | Resistor—470,000 ohms, ½ watt (R101)—Model 11QU only |
| 12013 | Resistor—1 meg., 1/10 watt (R1, R4, R29) |
| 13730 | Resistor—1 meg., ½ watt (R102)—Model 11QU only |
| 31056 | Resistor—1.2 meg., 1/10 watt (R17) |
| 30208 | Resistor—1.2 meg., ½ watt (R100)—Model 11QU only |
| 12679 | Resistor—2.2 meg., ½ watt (R9) |
| 14887 | Retainer—Indicator pointer drive cord pulley retainer |
| 31233 | Rotor—Selector rotor disc—mounts on rear of variable condenser rotor shaft |
| 31241 | Screw—¼ x 20 headless, cone point set screw for motor flywheel |
| 5042 | Screw—No. 8-32 headless set screw for pulley Stock No. 31271 |
| 31611 | Screw—No. 8-32 headless set screw for gear Stock No. 31239 |
| 14350 | Screw—No. 8-32 square head set screw for selector rotor disc |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31273, and pulley Stock No. 31272 |
| 31681 | Shaft—Variable condenser drive knob shaft |
| 31364 | Socket—Dial or pilot lamp socket |
| 31365 | Socket—Insulated lamp socket for Electric Tuning adjustment indicator lamp |
| 13871 | Socket—Magic Eye socket |
| 31347 | Socket—Pickup input socket and bracket |
| 31251 | Socket—Tube socket |
| 13638 | Spring—Indicator pointer drive cord tension spring |
| 31493 | Spring—Variable condenser motor rotor adjustment bearing spring—Model 11QU |
| 31232 | Spring—Selector plunger tip spring |
| 31230 | Spring—Selector plunger body spring |
| 31279 | Spring—Tension spring for band indicator |
| 31970 | Spring—Tension spring for push button switch latch bar |
| 31242 | Spring—Tension spring for motor flywheel |
| 31418 | Spring—Variable condenser drum drive cord tension spring |
| 31236 | Support—Variable condenser drive gear mounting support and studs |
| 31244 | Support—Variable condenser motor mounting support and studs—Models 11Q4 and 11QK only |
| 32090 | Support—Variable condenser motor mounting support and studs—Model 11QU only |
| 31360 | Switch—Pickup switch for mounting on push button switch (S7) |
| 31835 | Switch—Range switch (S1, S2, S3) |
| 31312 | Switch—Station selector push button switch and bracket assembly complete |
| 30953 | Switch—S.P.S.T. sensitivity switch (S5) |
| 31308 | Transformer—Power transformer 105-130, 140-160, 195-250 volts, 50-60 cycles (T1) |
| 31864 | Transformer—First i-f transformer (L16, L17, L18, C30, C31) |
| 31865 | Transformer—Second i-f transformer (L19, L20, L21, C34, C35) |
| 31268 | Transformer—Third i-f transformer (L22, L23, C38, C39) |
| 31836 | Volume Control and power switch (R12, S4) |
| 32231 | Washer—Comprising 1 metal washer, 2 fibre washers and 1 solder lug or retainer for station selector plunger |
| | **SPEAKER ASSEMBLIES**<br>**Model 11Q4 Only**<br>**(Speaker RL63J-2)** |
| 31825 | Cap—Speaker cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L25) |
| 11234 | Coil—Speaker field coil (L26) |
| 31310 | Cone—Speaker cone and voice coil (L24) |
| 31539 | Plug—5-contact male plug for speaker |
| 31829 | Speaker complete |
| 14534 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES**<br>**Models 11QK and 11QU Only**<br>**(Speaker RL70H-4)** |
| 13866 | Cap—Dust cap for cone center |
| 11234 | Coil—Field coil (L26) |
| 11469 | Coil—Neutralizing coil (L25) |
| 31275 | Cone—Speaker cone and voice coil (L24) |
| 31539 | Plug—5-contact male plug for speaker |
| 31538 | Speaker complete (RL70H-4) |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31358 | Button—Station selector push button |
| 13103 | Cap—Pilot lamp cap (bullseye)—Model 11QU only |
| 31286 | Carriage—Indicator pointer carriage—Models 11Q4 and 11QK only |
| 31456 | Cover—Celluloid covers (8) for push button markers |
| 31541 | Cushion—Motor plate mounting cushion and clamp assembly (sufficient for one instrument)—Model 11QU only |
| 31963 | Dial—Dial scale—Models 11Q4 and 11QK only |
| 31964 | Dial—Dial scale—Model 11QU only |
| 31362 | Escutcheon—Dial escutcheon less dial scale, and push buttons—Models 11Q4 and 11QK only |
| 31561 | Escutcheon—Dial escutcheon less dial scale, and push buttons—Model 11QU only |
| 30698 | Hinge—Cabinet lid hinge—Model 11QU only |
| 31564 | Holder—Needle card holder—Model 11QU only |
| 31284 | Indicator—Dial indicator pointer—Models 11Q4 and 11QK only |
| 31717 | Indicator—Dial indicator pointer, carriage, and clip assembly—Model 11QU only |
| 31355 | Knob—Tuning, volume control, tone control, or range switch knob |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31589 | Marker—Station call letter markers |
| 31457 | Marker—"Victrola" push button marker |
| 30868 | Plug—2-contact female plug for speaker cable |
| 30870 | Plug—2-contact male plug for speaker cable |
| 31285 | Screen—Dial color screen and light diffuser—Models 11Q4 and 11QK only |
| 31559 | Screen—Dial color screen and light diffuser—Model 11QU only |
| 31287 | Shaft—Indicator pointer carriage shaft |
| 31558 | Spring—Indicator pointer carriage spring stop |
| 14270 | Spring—Retaining spring for knob Stock No. 31355 |
| 31478 | Support—Cabinet lid support—Model 11QU only |
| 31470 | Suspension—Motorboard suspension springs, screw, and lockwasher (4 Reqd.)—Model 11QU only |

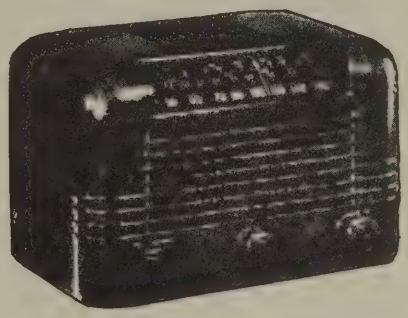
# MODEL Q11 and Q12

**Chassis No. RC-563E, RC-563F — RC-563, 563B, 563C, 563D**

## Five-Tube, Three-Band, AC-DC, Superheterodyne Receiver



MODEL Q 11



MODEL Q 12

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.8 m) |
| Short Wave ("C" Band) | 7.0-22.0 mc (42.8-13.6 m) |

INTERMEDIATE FREQUENCY ..... 455 kc.

RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA 12SA7 | 1st Detector-Oscillator |
| (2) RCA 12SK7 | I-F Amplifier |
| (3) RCA 12SQ7 | 2nd Detector, AVC, and A-F Amplifier |
| (4) RCA 50L6-GT | Power Output |
| (5) RCA 35Z5-GT | Rectifier |

PILOT LAMP (Q 12 Only) ..... Mazda 47

POWER SUPPLY RATINGS (DC or 40-100 cycles AC)

| Chassis | Ballast Resistor | Voltage | Watts |
|---|---|---|---|
| RC-563 | Stock No. 38289 | 105-125 | 35 |
| RC-563 | Stock No. 38289 | 210-250 | 70 |
| RC-563 | M-91462-7 | 140-160 | 46 |
| RC-563 | M-91462-8 | 160-200 | 55 |
| RC-563B | —— | 110 | 35 |
| RC-563C | Stock No. 39346 | 105-125 | 37 |
| RC-563C | Stock No. 39346 | 210-250 | 85 |
| RC-563C | M-95178-7 | 140-160 | 54 |
| RC-563C | M-95178-8 | 160-200 | 67 |
| RC-563D | —— | 110 | 37 |
| RC-563E | M-95178-10 | 105-125 | 40 |
| RC-563E | M-95178- 7 | 140-160 | 50 |
| RC-563E | M-95178- 8 | 160-200 | 65 |
| RC-563E | M-95178-10 | 210-250 | 80 |
| RC-563E | M-95178- 9 | 260-300 | 95 |
| RC-563F | —— | 105-125 | 40 |

POWER OUTPUT RATINGS

| Chassis | Voltage | Maximum |
|---|---|---|
| RC-563 | 117 | 2.4 |
| RC-563 | 234 | 4.1 |
| RC-563B | 117 | 2.2 |
| RC-563C | 117 | 1.6 |
| RC-563C | 234 | 4.1 |
| RC-563D | 117 | 2.2 |
| RC-563E | 117 | 2.4 |
| RC-563E | 234 | 4.1 |
| RC-563F | 117 | 2.2 |

LOUDSPEAKERS

| | RL-81B-2 | RL-86A-3 | RL-86B-2 |
|---|---|---|---|
| Type | 5-inch PM | 5-inch EM | 5-inch EM |
| V.C. Impedance at 400 cycles | 4 ohms | 4 ohms | 4 ohms |
| Field Resistance | —— | 450 ohms | 3,300 ohms |

POWER-VOLUME CONTROL

TUNING CONTROL

RANGE CONTROL

POWER SUPPLY POLARITY

For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, a similar reversal of the plug may reduce hum.

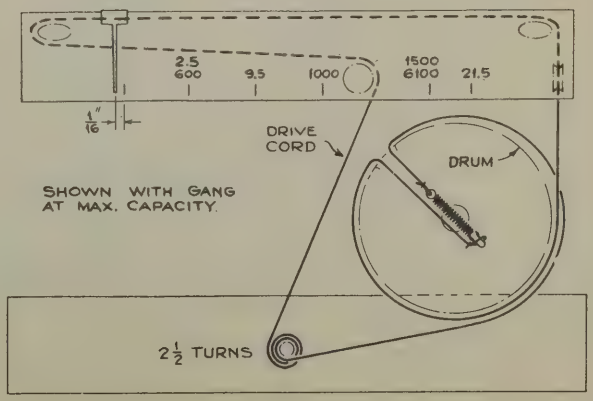
PHONOGRAPH OPERATION

A jack is provided on the rear of the chassis for connection to a Record Player. The cable from the Record Player should be terminated in a Stock No. 31048 plug to fit the jack.

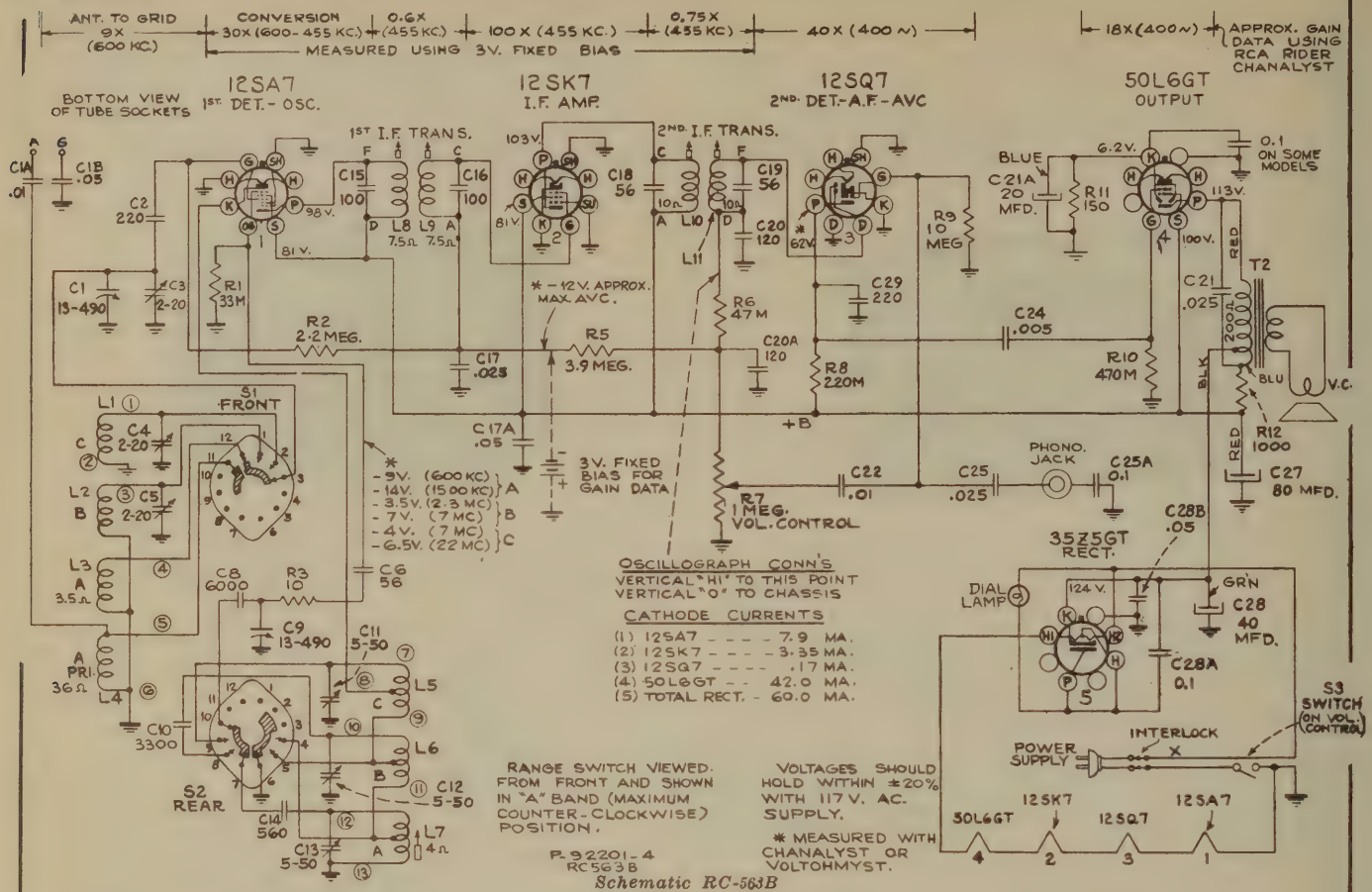
The attachment must be designed to operate on the particular voltage and frequency of the power supply line. (Most attachments are for alternating current only, and can not be used on direct current.)

For Phono Operation tune the receiver to a quiet point on the dial, turn the radio volume control to minimum, and use the control on the Record Player to regulate volume.

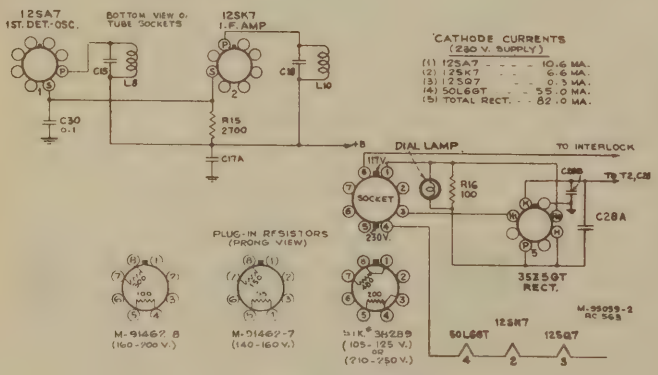
For radio operation, always remove the record-player plug from the jack.



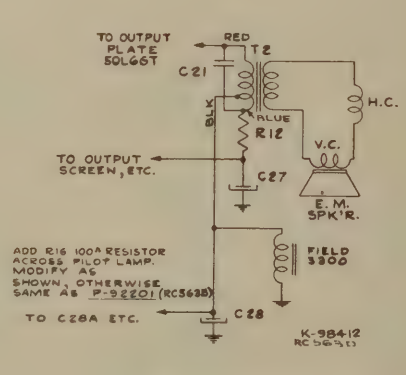
Q11, Q12


ANT. TO GRID 9X (600 KC.)
CONVERSION 30X (600-455 KC.)
0.6X (455 KC.)
100 X (455 KC.)
0.75X (455 KC.)
40 X (400 ~)
MEASURED USING 3V. FIXED BIAS
18X (400~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
BOTTOM VIEW OF TUBE SOCKETS
12SA7 1ST DET.-OSC.
12SK7 I.F. AMP.
12SQ7 2ND DET.-A.F.-AVC
50L6GT OUTPUT
1ST I.F. TRANS.
2ND. I.F. TRANS.
* -12 V. APPROX. MAX. AVC.
3V. FIXED BIAS FOR GAIN DATA
S1 FRONT
S2 REAR
S3 SWITCH (ON VOL. CONTROL)
* -9V. (600 KC)
-14V. (1500 KC) A
-3.5V. (2.3 MC)
-7V. (7 MC) B
-4V. (7 MC)
-6.5V. (22 MC) C
R7 1 MEG. VOL. CONTROL
PHONO. JACK
35Z5GT RECT.
DIAL LAMP
INTERLOCK
POWER SUPPLY
OSCILLOGRAPH CONN'S
VERTICAL "HI" TO THIS POINT
VERTICAL "O" TO CHASSIS
CATHODE CURRENTS
(1) 12SA7 - - - - 7.9 MA.
(2) 12SK7 - - - - 3.35 MA.
(3) 12SQ7 - - - - .17 MA.
(4) 50L6GT - - 42.0 MA.
(5) TOTAL RECT. - 60.0 MA.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAXIMUM COUNTER-CLOCKWISE) POSITION.
P-92201-4
RC563B
VOLTAGES SHOULD HOLD WITHIN ±20% ACROSS PILOT LAMP. MODIFY AS SHOWN; OTHERWISE SAME AS P-92201 (RC563B)
* MEASURED WITH CHANALYST OR VOLTOHMYST.

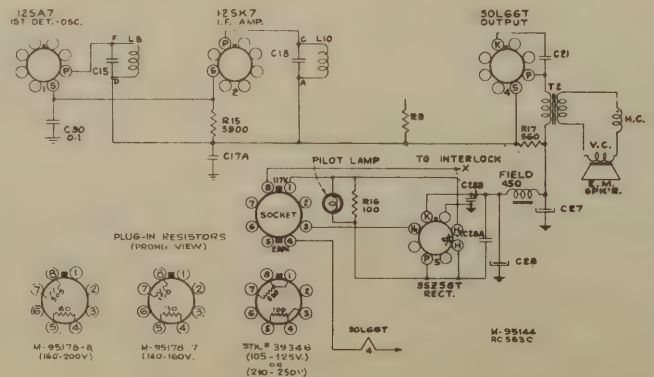
*Schematic RC-563B*


12SA7 1ST. DET.-OSC.
BOTTOM VIEW OF TUBE SOCKETS
12SK7 I.F. AMP
CATHODE CURRENTS (230 V. SUPPLY)
(1) 12SA7 - - - - 10.6 MA.
(2) 12SK7 - - - - 6.6 MA.
(3) 12SQ7 - - - - 0.3 MA.
(4) 50L6GT - - - 55.0 MA.
(5) TOTAL RECT. - - 82.0 MA.
DIAL LAMP
TO INTERLOCK
PLUG-IN RESISTORS (PRONG VIEW)
35Z5GT RECT.
50L6GT
12SK7
12SQ7
M-91467-8 (160-200 V.)
M-91467-7 (140-160 V.)
STK.# 38289 (105-125 V.) (210-250 V.)
M-95039-2 RC 563

*Schematic RC-563*




*Schematic RC-563D*




*Schematic RC-563C*

## SCHEMATIC DIAGRAMS MODEL Q12

## IDENTIFICATION OF MODELS

| Chassis No. | Model | Output Trans. | Speaker | Field |
|---|---|---|---|---|
| RC 563 | Q12 | #36800 | RL81B2 | PM |
| RC 563-B | | #36800 | RL81B2 | PM |
| RC 563-C | | #36800 | RL86B2 | 3300 ohm |
| RC 563-D | | #39345 | RL86A3 | 450 ohm |
| RC 563-E | Q11 | #39345 | RL86A3 | 450 ohm |
| RC 563-F | | #36800 | RL86B2 | 3300 ohm |

Model Q11 is identical electrically to Model Q12 except that Model Q11 does not use a pilot lamp.

The standard Ballast Resistor Stock No. 38289 or Stock No. 39346 may be replaced with other types for operation on other voltage ranges.

THE BALLAST RESISTOR MUST BE INSTALLED IN PLACE OF #38289 OR 39346 WITH THE LUG AT THE 230 VOLT MARK.

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be 1/16 inch to the left of first mark on dial backing plate.

**Precautionary Lead Dress.**—

Dress 0.01 capacitor from volume control away from power switch.

Yellow cathode lead from 12SA7 socket to oscillator coil must be dressed around coil form.

Yellow lead from band switch to antenna coil must be dressed around coil form.

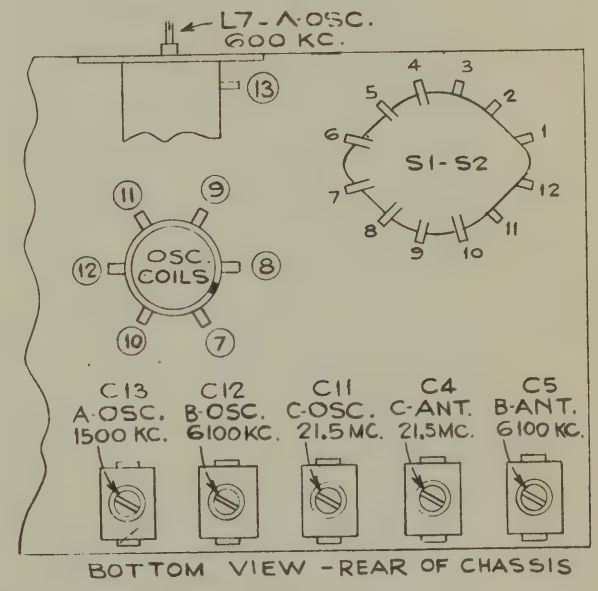
| Steps | Range Switch | Connect high side test osc. to— | Tune test osc. to— | Turn radio dial to | Adjust following for max. peak output |
|---|---|---|---|---|---|
| 1 | "A" | 12SK7 I-F grid in series with .01 mfd. | 455 kc | "A" band quiet point at high freq. end. | **L10, L11** (2nd I-F trans.) |
| 2 | | 12SA7 1st det. grid, in series with .01 mfd. | | | L9, L8 † (1st I-F trans.) |
| 3 | | Antenna lead in series with 200 mmf. | 1,500 kc (200 m) | 1,500 kc mark (5th mark) | C13, C3 |
| 4 | | | 600 kc (500 m) | 600 kc mark (2nd mark) | L7** Rock gang |
| 5 | | | Repeat steps 3 and 4 | | |
| 6 | "B" | Antenna lead in series with 300 ohms | 6.1 mc | 6.1 mc mark (5th mark) | C12* (osc.) C5 (ant.) |
| 7 | "C" | | 21.5 mc | 21.5 mc mark (6th mark) | C11* C4 |

* Use minimum capacity peak if two peaks can be obtained.

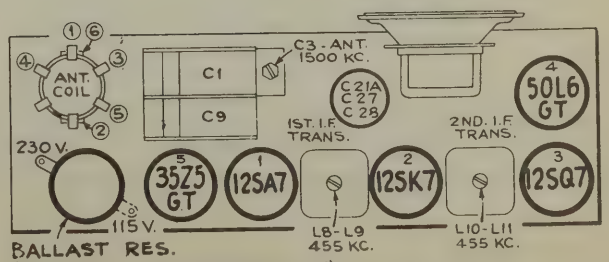
** Rock gang slightly for peak output.

† Do not readjust **L11** or L10 when test oscillator is applied to the 12SA7 Grid.

**NOTE: Oscillator tracks above signal on all bands.**



BOTTOM VIEW - REAR OF CHASSIS



BALLAST RES.
(ON RC563 E RC563 AND RC563C ONLY)

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

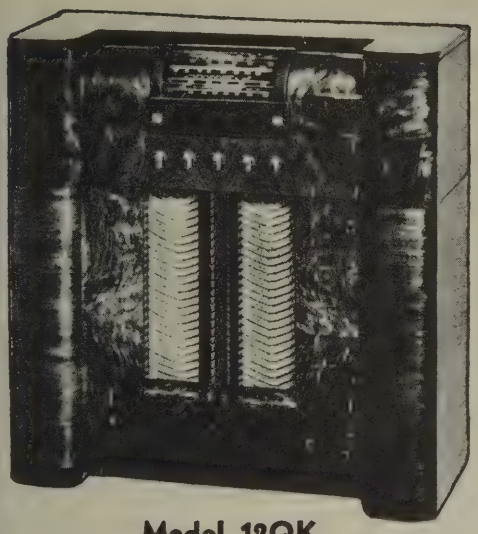
| STOCK NO. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-563 110/220 AC-DC) (RC-563B 110 AC-DC)** |
| 38289 | Ballast—Ballast tube resistor for 220 volts operation |
| 36238 | Bracket—Dial lamp bracket |
| 38327 | Capacitor—Electrolytic, comprising 1 section of 80 mfd., 250 volts, and 1 section of 40 mfd., 250 volts, and 1 section 20 mfd., 25 volts |
| 38290 | Capacitor—Mica trimmer comprising 3 sections of 5-50 mmfd., and 2 sections of 2-20 mmfd. |
| 12723 | Capacitor—56 mmfd., moulded |
| 30949 | Capacitor—56 mmfd., unmoulded |
| 30904 | Capacitor—100 mmfd. |
| 12724 | Capacitor—120 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 31403 | Capacitor—3300 mmfd. |
| 31405 | Capacitor—6000 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4858 | Capacitor—.01 mfd., 500 volts |
| 4937 | Capacitor—.01 mfd., 1000 volts |
| 4886 | Capacitor—.05 mfd., 400 volts |
| 32786 | Capacitor—0.1 mfd., 300 volts (220/110 AC DC only) |
| 4839 | Capacitor—0.1 mfd., 400 volts |
| 32821 | Coil—Antenna coil |
| 38292 | Coil—Oscillator coil |
| 38287 | Condenser—Variable tuning condenser |
| 38406 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 50-inch overall length) |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 37068 | Indicator—Station selector indicator |
| 37982 | Insulator—Phono input socket insulator |
| 38288 | Plate—Dial back plate complete with pulleys and bracket—less dial |
| 33825 | Plug—2 Prong male plug for power input |
| 36230 | Pulley—Drive cord pulley |
| 36237 | Pulley—Tuning condenser pulley |
| 38289 | Resistor—Ballast tube resistor for 220 volts operation |
| 13988 | Resistor—10 ohms, ½ watt |
| 35711 | Resistor—100 ohms, 4 watt (220/110 AC DC only) |
| 30880 | Resistor—150 ohms, ½ watt |
| 30730 | Resistor—2700 ohms, ½ watt (220/110 AC DC only) |
| 34766 | Resistor—1000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 32809 | Resistor—3.9 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 36897 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 38291 | Switch—Range switch |
| 36800 | Transformer—Audio transformer for models using speaker stamped RL81B2 or RL86B2 |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 38289 | Tube—Ballast tube resistor for 220 volt operation |
| 33726 | Washer—"C" washer for tuning shaft |
| | **CHASSIS ASSEMBLIES (RC-563C 110/220 AC-DC) (RC-563D 110 AC-DC) Same as Models RC-563 & RC-563B** |
| | **EXCEPT:** |
| 39346 | Ballast—Ballast tube resistor for 110/220 AC-DC Models |
| 39346 | Resistor—Ballast tube resistor for 110/220 AC-DC Models |
| 39346 | Tube—Ballast tube resistor for 110/220 AC-DC Models |
| | **ADD:** |
| 30735 | Resistor—560 ohms, 1 watt (for 220/110 AC-DC) |
| 30694 | Resistor—3,900 ohms, ½ watt (for 220/110 AC-DC) |
| 39345 | Transformer—Audio transformer for models using speaker stamped RL86A3 |
| | **DELETE:** |
| 30730 | Resistor—2,700 ohms, ½ watt (for 220/110 AC-DC) |

| STOCK NO. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | **MODEL Q11, RC563E, RC563F** |
| | Same as RC563 and RC563B |
| | **EXCEPT:** |
| 39346 | Ballast—Ballast tube resistor for 110/220 AC-DC Models |
| 39346 | Resistor—Ballast tube resistor for 110/220 AC-DC Models |
| 39346 | Tube—Ballast tube resistor for 110/220 AC-DC Models |
| | **ADD:** |
| 30735 | Resistor—560 ohms, 1 watt (for 220/110 AC-DC) |
| 30694 | Resistor—3,900 ohms, ½ watt (for 220/110 AC-DC) |
| 39345 | Transformer—Audio transformer for models using speaker stamped RL86A3 |
| | **DELETE:** |
| 36238 | Bracket - Dial lamp bracket. |
| 30730 | Resistor - 2700 ohms - 1/2 watt - for 110/220 AC-DC Models. |
| 34449 | Socket - Dial lamp socket. |
| | **SPEAKER ASSEMBLIES (RL81B2)** |
| 35570 | Cone—Cone complete with voice coil |
| 37612 | Speaker—5-inch permanent magnet speaker complete with cone and coil—less output transformer |
| | **SPEAKER ASSEMBLIES (110/220 AC-DC) (RL-86A-3)** |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| 39543 | Coil—Field coil, 450 ohms |
| | **SPEAKER ASSEMBLIES (110 AC-DC) (RL-86B-2)** |
| 32907 | Cap—Dust cap |
| 39348 | Coil—Field coil—3,300 ohms |
| 35570 | Cone—Cone complete with voice coil |
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker, order replacement parts by referring to model number of instrument, number stamped on speaker and full description of part required. |
| | **MODEL Q 11 MISCELLANEOUS ASSEMBLIES** |
| 39696 | Back—Cabinet back—less power cord and plug. |
| 32836 | Cord—Power cord and plug |
| 36103 | Decalcomania—"Off-Volume" decal |
| 35480 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 39745 | Dial—Glass dial scale |
| 38334 | Knob—Range switch or volume control knob |
| 37256 | Knob—Tuning knob |
| 31390 | Mounting—One set chassis mounting screws and washers |
| 30900 | Spring—Retaining spring for knobs |
| | **MODEL Q12 MISCELLANEOUS ASSEMBLIES** |
| 38293 | Back—Cabinet back—less power cord |
| 36890 | Clamp—Dial clamp—L.H. |
| 36891 | Clamp—Dial clamp—R.H. |
| 32836 | Cord—Power cord and plug |
| 36103 | Decalcomania—"Off-Volume" decal |
| 35480 | Decalcomania—Range switch decal |
| 38328 | Dial—Glass dial scale |
| 37831 | Fastener—Push on fastener for back |
| 36886 | Knob—Range switch or volume control knob |
| 36722 | Knob—Tuning knob |
| 31480 | Lamp—Dial lamp |
| 30900 | Spring—Retaining spring for knobs |

# MODELS 12Q4, 12QK, and 12QU

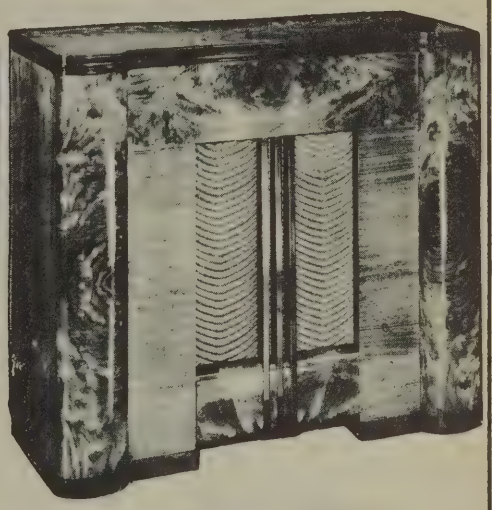
Chassis No. RC-338 RC-338 RC-338A

## Twelve-Tube, Eight-Band, Radios and Victrola



Model 12QK

Model 12Q4



Model 12QU

## Electrical Specifications

FREQUENCY RANGES

| | | | |
|---|---|---|---|
| Long Wave ("X" Band) | 150-400 kc (2,000-750 m) | 49 Meter Spread Band | 5.92-6.23 mc |
| Medium Wave ("A" Band) | 530-1,625 kc (566-184.6 m) | 31 Meter Spread Band | 9.48-9.70 mc |
| Short Wave 1 ("B" Band) | 2.3-7.0 mc (130-42.8 m) | 25 Meter Spread Band | 11.68-11.94 mc |
| Short Wave 2 ("C" Band) | 7.0-22 mc (42.8-13.6 m) | 19 Meter Spread Band | 15.08-15.39 mc |

INTERMEDIATE FREQUENCY ..... 455 kc

RADIOTRON COMPLEMENT

| | | | |
|---|---|---|---|
| (1) RCA-6K7 | R-F Amplifier | ( 8) RCA-6J5 | Phase Inverter |
| (2) RCA-6J7 | Oscillator | ( 9) RCA-6F6 | Power Output |
| (3) RCA-6L7 | 1st Detector | (10) RCA-6F6 | Power Output |
| (4) RCA-6K7 | 1st I-F Amplifier | RCA-5U4-G (In PSU 10A, 10B, 10C A-C power supply unit) | Rectifier |
| (5) RCA-6K7 | 2nd I-F Amplifier | RCA-5T4 (In PSU 10E D-C power supply unit) (For use with 12Q4 or 12QK only) | Rectifier |
| (6) RCA-6R7 | 2nd Det., A.V.C., and 1st A-F Amplifier | | |
| (7) RCA-6J5 | 2nd A-F Amplifier | | |

PILOT LAMPS

Models 12Q4 and 12QK ..... One 6.3-volt, 0.15-amp., Mazda No. 47; two 6.3-volt, 0.25 amp., Mazda No. 44
Model 12QU ..... One 6.3-volt, 0.15-amp., Mazda No. 47; three 6.3-volt, 0.25 amp., Mazda No. 44

POWER OUTPUT RATING

Undistorted ..... 10 watts
Maximum ..... 12 watts

LOUDSPEAKER (RL-70H-3)

Type ..... 12-inch electrodynamic
Voice Coil Impedance at 400 cycles ..... 2.2 ohms

POWER SUPPLY RATINGS

| A-C Ratings | | 12Q4, 12QK | 12QU * Radio | 12QU * Total |
|---|---|---|---|---|
| With PSU 10A Power Supply Unit | 105-125 volts, 50-60 cycles | 125 watts | 125 watts | 150 watts |
| With PSU 10B Power Supply Unit | 105-125 volts, 25-60 cycles | 125 watts | | |
| With PSU 10C Power Supply Unit | 105-130, 140-160, 200-250 volts, 50-60 cycles | 125 watts | 125 watts | 150 watts |

D-C Ratings

With PSU 10E Power Supply Unit ..... 105-125, 210-250 volts D-C ..... (See text for current consumption ratings)

* Model 12QU may be used with PSU 10A or 10C *only*.

PHONOGRAPH (Model 12QU only)

Type ..... Automatic
Record Capacity ..... Eight 10-inch or seven 12-inch
Turntable Speed ..... 78 r.p.m. (adjustable)
Type Pickup ..... Crystal
Pickup Impedance ..... 100,000 ohms at 1,000 cycles

## Power Supply Units

Models 12Q4, 12QK, and 12QU have seven-prong connectors for connection to a separate power supply unit. Units are available in different ratings for a.c. and d.c. operation, as listed under "Power Supply Ratings" in the electrical specifications. It should be noted, however, that Model 12QU may be used with a.c. units PSU 10A or 10C **only**.

REFER TO INDEX FOR DATA ON ELECTRIC TUNING AND AUTOMATIC RECORD CHANGER

When Model 12Q4 or Model 12QK is used with a d.c. Power Supply Unit, the measured current drain is 0.7 amperes from a 234 volt supply, and 1.4 amperes from a 117 volt supply. These current values may vary as much as 30% when measured by various types of ammeters, due to the rectangular wave-shape of the vibrator current.

Service data, diagrams, and replacement parts lists for the power supply units are printed in separate service data sheets which should be referred to for further information.

12Q4, 12QK, 12QU

# ALIGNMENT PROCEDURE

Alignment using the Cathode Ray Oscillograph is much the preferable method because of the variable selectivity features of these instruments. The curves shown illustrate the general shape of the i-f selectivity curves for different settings of the fidelity control, when i-f channel is properly aligned. Connections for the oscillograph are shown in the bottom view of the receiver chassis. Use short, unshielded leads to oscillograph, and well-shielded leads from test oscillator. If possible, use 30 or 40 kc sweep frequency for i-f alignment.

**Output Meter Alignment.**—If this method is used, connect meter across voice coil, and turn receiver volume control to maximum. Disregard steps 5 and 5A of alignment table. However, a listening check should be made to check operation of fidelity control, after receiver has been aligned.

**Test Oscillator.**—For all alignment operations connect the "Gnd" side of test oscillator to chassis, the high side as indicated in table, and keep output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end calibration marks on the dial scales, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

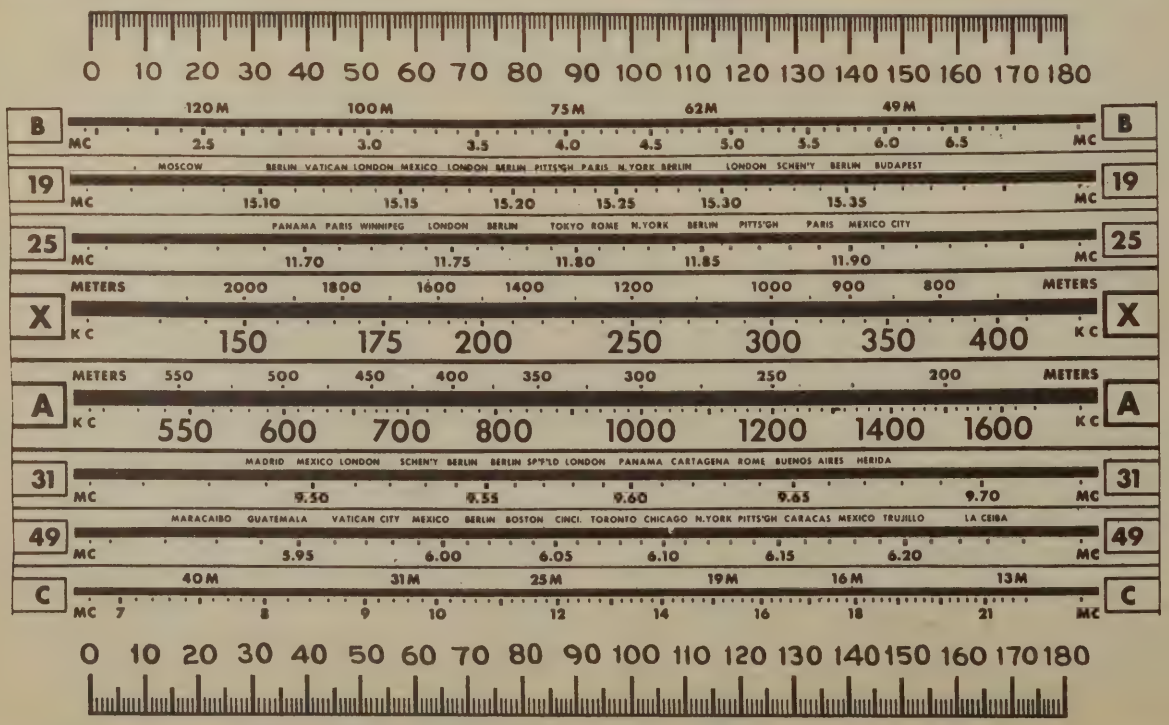
## Purpose and Function of Fidelity Control

MODELS 12QK AND 12Q4

| Position | For Use On | I-F Channel | Audio Channel |
|---|---|---|---|
| 1 (Extreme Counter-clockwise) | Record Player | ——— | Min. highs |
| 2 | Record Player | ——— | Max. highs |
| 3 | Distant Stations | Sharp | Min. highs |
| 4 | Distant Stations | Sharp | Max. highs |
| 5 | Local and Medium Distant Stations | Medium | Max. highs |
| 6 (Extreme Clockwise) | Local Stations | Broad | Max. highs |

MODEL 12QU

| Position | For Use On | I-F Channel | Audio Channel |
|---|---|---|---|
| 1 (Extreme Counter-clockwise) | Victrola | ——— | Min. highs |
| 2 | Victrola | ——— | Medium No. 1 |
| 3 | Victrola | ——— | Medium No. 2 |
| 4 | Victrola | ——— | Max. highs |
| 5 | Distant Stations | Sharp | Min. highs |
| 6 | Distant Stations | Sharp | Max. highs |
| 7 | Local and Medium Distant Stations | Medium | Max. highs |
| 8 (Extreme Clockwise) | Local Stations | Broad | Max. highs |


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
B
120M 100M 75M 62M 49M
MC 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 MC
19
MOSCOW BERLIN VATICAN LONDON MEXICO LONDON BERLIN PITTS'GH PARIS N.YORK BERLIN LONDON SCHEN'Y BERLIN BUDAPEST
MC 15.10 15.15 15.20 15.25 15.30 15.35 MC
25
PANAMA PARIS WINNIPEG LONDON BERLIN TOKYO ROME N.YORK BERLIN PITTS'GH PARIS MEXICO CITY
MC 11.70 11.75 11.80 11.85 11.90 MC
X
METERS 2000 1800 1600 1400 1200 1000 900 800 METERS
KC 150 175 200 250 300 350 400 KC
A
METERS 550 500 450 400 350 300 250 200 METERS
KC 550 600 700 800 1000 1200 1400 1600 KC
31
MADRID MEXICO LONDON SCHEN'Y BERLIN BERLIN SP'S'LD LONDON PANAMA CARTAGENA ROME BUENOS AIRES HERIDA
MC 9.50 9.55 9.60 9.65 9.70 MC
49
MARACAIBO GUATEMALA VATICAN CITY MEXICO BERLIN BOSTON CINCI. TORONTO CHICAGO N.YORK PITTS'GH CARACAS MEXICO TRUJILLO LA CEIBA
MC 5.95 6.00 6.05 6.10 6.15 6.20 MC
C
40M 31M 25M 19M 16M 13M
MC 7 8 9 10 12 14 16 18 21 MC
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Receiver Dial Scales, and Corresponding 0-180° Calibration Scales*

12Q4, 12QK, 12QU

# Alignment Table

| Step | Connect high side of test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust following for maximum peak output | Check Selectivity Curve No. |
|---|---|---|---|---|---|
| 1 | Turn fidelity control to 3rd position from maximum clockwise, sensitivity switch min. (open) | | | | |
| 2 | 6K7 2nd I.F. grid cap in series with .01 mfd. | 455 kc | "A" band Quiet Point between 550-750 kc | L31 and L32 3rd I-F Trans. | 1 |
| 3 | 6K7 1st I.F. grid cap in series with .01 mfd. | | | L28 and L29 2nd I-F Trans. | 2 |
| 4 | 6L7 1st-det. grid cap in series with .01 mfd. | | | L23 and L24 1st I-F Trans. | 3 |
| 5 | Turn fidelity control one position back from full clockwise | | | | 4 |
| 5A | Turn fidelity control full clockwise | | | | 5 |
| 6 | Turn fidelity control to 3rd position from maximum clockwise for the following operations | | | | |
| 7 | Antenna Terminal, in series with 200 mmf. | 2,440 kc | "B" band 2.44 mc (16°) | L18 (osc.) † | |
| 8 | Antenna Terminal, in series with 300 ohms | 6,100 kc | "B" band 6.1 mc (150°) | C18 (osc.) C31 (det.) ** C6 (ant.) ** | |
| 9 | Antenna Terminal, in series with 200 mmfd. | 600 kc | "A" band 600 kc (36°) | L12 (osc.) Rock Gang | |
| 10 | | 1,500 kc | "A" band 1,500 kc (158°) | C15 (osc.) C70 (det.) | |
| 11 | | 600 kc | "A" band 600 kc (36°) | L12 (osc.) Rock Gang | |
| 12 | | 175 kc | "X" band 175 kc (54°) | L13 (osc.) Rock Gang | |
| 13 | | 350 kc | "X" band 350 kc (147°) | C19 (osc.) | |
| 14 | | 175 kc | "X" band 175 kc (54°) | L13 (osc.) Rock Gang | |
| 15 | Antenna Terminal, in series with 300 ohms | 9,600 kc | "C" band 9.6 mc (58.5°) | L11 (osc.) †† | |
| 16 | | 20,000 kc | "C" band 20 mc (157°) | C12 (osc.) | |
| 17 | | 9,600 kc | "31M" band 9.6 mc (100°) | L17 (osc.) C29 (det.) C4 (ant.) | |
| 18* | | 6,100 kc | "49M" band 6.1 mc (106°) | C8 (osc.) | |
| 19 | | 11,800 kc | "25M" band 11.8 mc (90°) | L14 (osc.) | |
| 20 | | 15,200 kc | "19M" band 15.2 mc (78°) | L15 (osc.) | |

*** NOTE:**

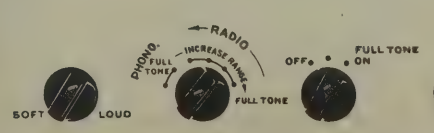
In step 18 only, the oscillator tracks on low side of signal; use maximum capacity peak (plunger in) if two peaks can be obtained. All other oscillator adjustments use minimum inductance or capacity peak (plunger out), if two peaks can be obtained.

** Use maximum capacity peak if two can be obtained.

† Before adjusting L18, set C18 so it projects approximately 2 inches above top of chassis.

†† Before adjusting L11, set C12 so it projects approximately 2 inches above top of chassis.

*I-F Selectivity Curves*




*Location of Controls, Models 12Q4 and 12QK*

*Location of Controls, Model 12QU*

12Q4, 12QK, 12QU

# Miscellaneous Service Data

**Plug for Extension Loudspeaker.**—A two-contact female socket, equipped with a male plug, is connected across the output circuit on the loudspeaker to facilitate the connection of an extension loudspeaker if desired.

**A permanent-magnet dynamic speaker, with voice-coil impedance of not less than 2 ohms is recommended:** With a 2-ohm voice coil, the extension speaker will receive approximately half the power output of the receiver; with a higher-impedance voice coil, the percentage of power delivered to the extension speaker will be decreased.

A high-impedance magnetic-type speaker may be used in conjunction with a suitable coupling transformer such as RCA Stock No. 7853.

**Victrola Attachment (record player).**—A jack located on the top near the front of the chassis is provided for connecting a Victrola Attachment (record player) into the audio amplifying circuit on Models 12Q4 and 12QK. The cable running from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

**Antenna Connections.**—Three terminals ("A," "G1," and "G2") are provided on the rear of the chassis. Connect the antenna to "A." Connect "G1" to a nearby ground. A link connects "G1" and "G2." In case of electrical interference (especially on "X" band) open the link and connect "G2" separately to ground. This also applies when a d.c. power supply is used.

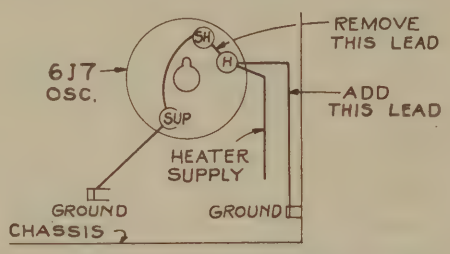
### Hum Modulation:

A limited number of earlier production instruments may exhibit a hum or low frequency interference when tuned to a short wave station on the spread bands. The interference is accentuated by slight detuning of the station to one side of the carrier. Should this condition be observed, it can be readily eliminated by reference to the following diagram and instructions:

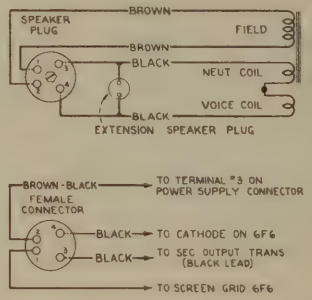
(a) Remove the small bus lead which joins the "Shield" and "Heater" contacts on the 6J7 oscillator socket.

(b) Install a short lead between the "Heater" contact and side of chassis as shown above.

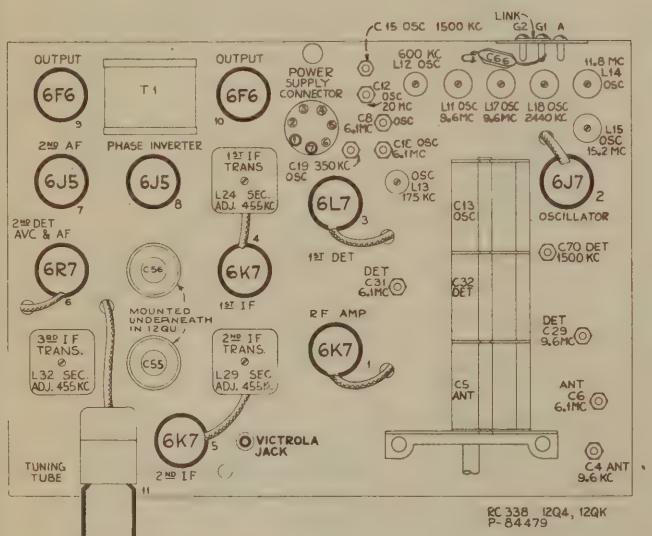
**CAUTION.**—Do not disturb other leads when making this change, otherwise it may be necessary to make a slight re-adjustment of the 19 and 25 meter oscillator trimmers to restore proper dial calibration.

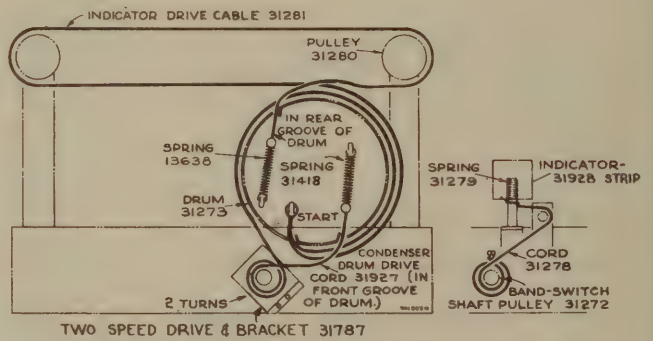



*Models 12Q4, 12QK, 12QU Hum Reduction.*



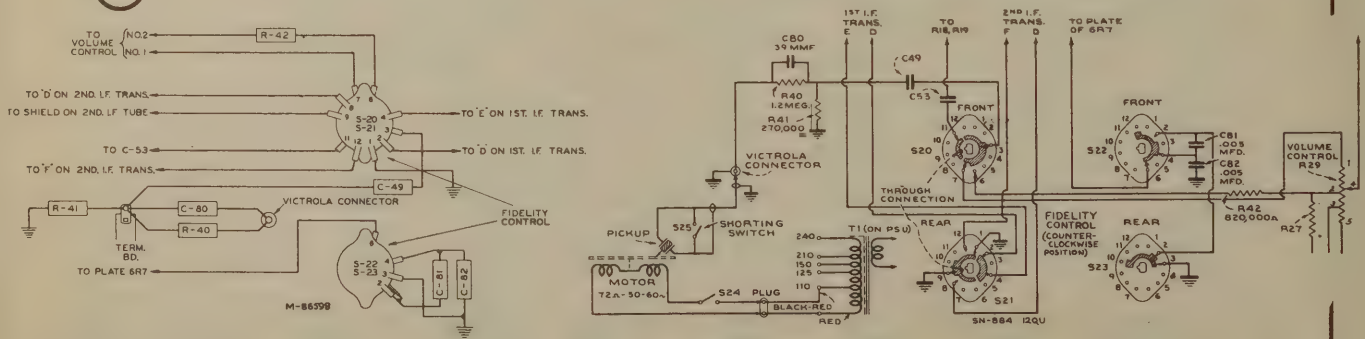

*Connections of Loudspeaker and Cable*



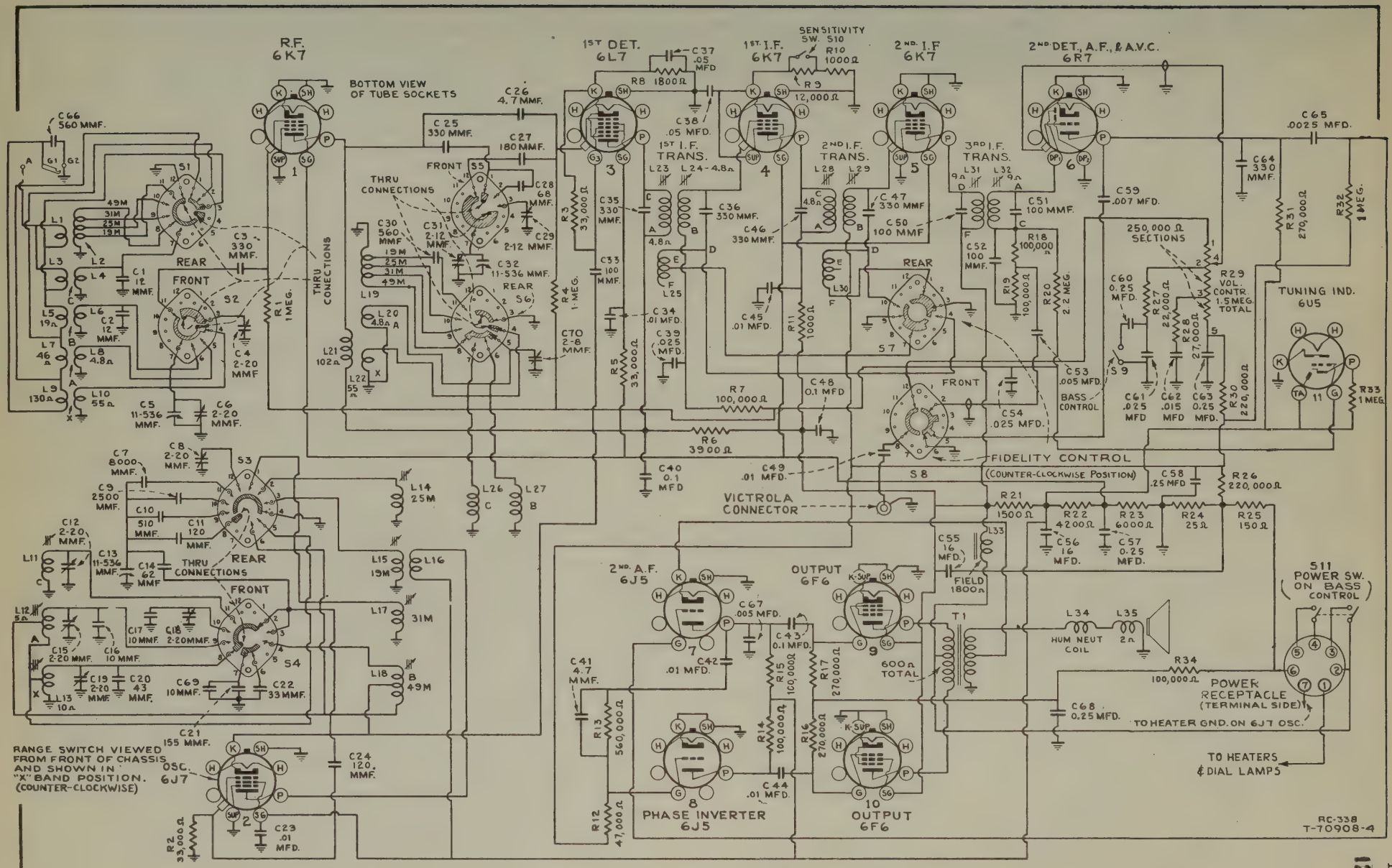

***Above**—Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

***At Left**—Location of Tubes and Trimmers*




*Model 12QU Victrola Input Circuit*

**Except for the changes shown above, the schematic and wiring diagrams for Models 12Q4 and 12QK also apply to Model 12QU.**




*Schematic Diagram, Models 12Q4 and 12QK*

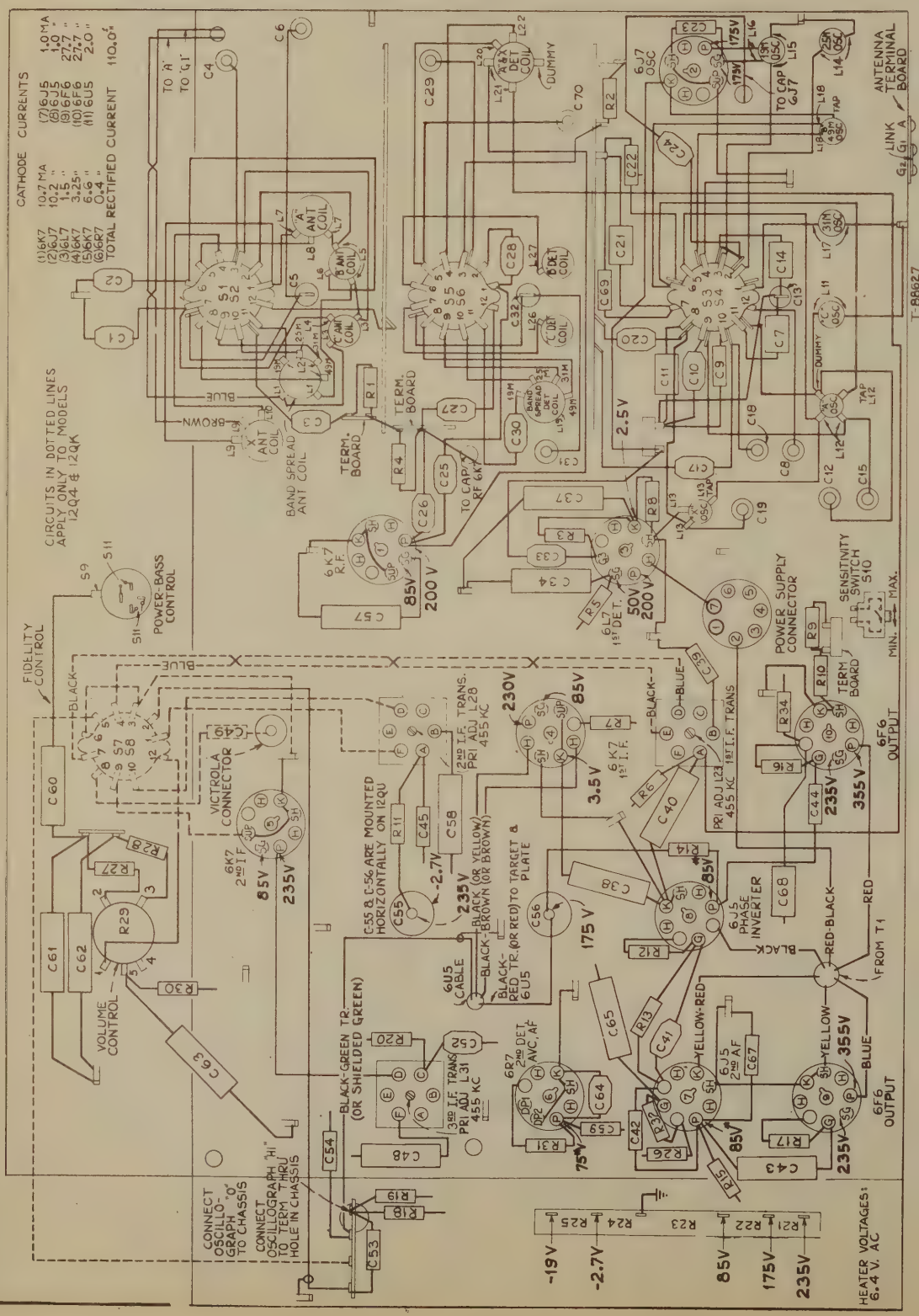
**Model 12QU is the same except for the Victrola connections, which are shown in a separate diagram.**

**The power supply units (PSU 10A, 10B, 10C, and 10E) for this receiver are described in separate service data sheets, which should be referred to for further information.**

12Q4, 12QK, 12QU

**Precautionary Lead Dress.—**

1. The following leads should be dressed away from other parts and chassis:
   a. All leads to the bottom of the tuning gang.
   b. All capacitor leads to oscillator section of range switch.
   c. Yellow lead from lug No. 10 on S4 to dummy lug on "A" oscillator coil.
   d. Yellow lead from pin No. 8 on 6J7 oscillator socket to terminal board.
   e. Yellow and green leads from "X" detector coil (should be dressed away from each other as well as other parts).
2. Dress all leads away from phono jack and C49.
3. Twisted leads of "B" oscillator coil must be soldered together within ¼-inch of coil tube.
4. The brown, black, and blue leads in back of the oscillator coils should be dressed away from coil windings.
5. R13 and C41 must be dressed away from pin No. 7 of 6J5 (tube No. 7).




*R-F Wiring Diagram and Socket Voltages, Models 12Q4 and 12QK*

**Model 12QU is the same except for the Victrola connections, which are shown in a separate diagram.**

*** NOTE:** Values with star ( * ) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, sensitivity switch at maximum (closed), and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

12Q4, 12QK, 12QU

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 31815 | Board—Antenna and ground terminal board—Models 12Q4 and 12QK only |
| 31929 | Board—Antenna and ground terminal board—Model 12QU only |
| 31276 | Bracket—Band indicator bracket complete less indicator strip, spring, and cord |
| 31282 | Bracket—Magic Eye mounting bracket and clip |
| 31281 | Cable—Indicator pointer drive cable |
| 30766 | Cap—Rubber cap for Magic Eye |
| 12607 | Cap—Top shield cap for i-f transformers |
| 12807 | Capacitor—Trimmer 2-8 mmfd. (C70) |
| 12714 | Capacitor—Trimmer 2-12 mmfd. (C29, C31) |
| 12884 | Capacitor—Trimmer 2-20 mmfd. (C4, C6, C8, C12, C15, C18, C19) |
| 14392 | Capacitor—4.7 mmfd. (C26, C41) |
| 31709 | Capacitor—10 mmfd. (C69) |
| 13200 | Capacitor—10 mmfd. (C16, C17) |
| 13002 | Capacitor—12 mmfd. (C1, C2) |
| 31354 | Capacitor—33 mmfd. (C22) |
| 13545 | Capacitor—39 mmfd. (C80)—Model 12QU only |
| 31822 | Capacitor—43 mmfd. (C20) |
| 31349 | Capacitor—62 mmfd. (C14) |
| 13057 | Capacitor—68 mmfd. (C28) |
| 31270 | Capacitor—100 mmfd. (C50, C51) |
| 12720 | Capacitor—100 mmfd. (C33, C52) |
| 31706 | Capacitor—120 mmfd. (C11) |
| 12724 | Capacitor—120 mmfd. (C24) |
| 31708 | Capacitor—155 mmfd. (C21) |
| 13003 | Capacitor—180 mmfd. (C27) |
| 31756 | Capacitor—330 mmfd. (C35, C36, C46, C47) |
| 12952 | Capacitor—330 mmfd. (C3, C25, C64) |
| 30608 | Capacitor—510 mmfd. (C10) |
| 12537 | Capacitor—560 mmfd. (C30, C66) |
| 31703 | Capacitor—2,500 mmfd. (C9) |
| 31704 | Capacitor—8,000 mmfd. (C7) |
| 5107 | Capacitor—.0025 mfd. (C65) |
| 4838 | Capacitor—.005 mfd. (C53, C67, C81, C82—C81, C82 in Model 12QU only) |
| 5148 | Capacitor—.007 mfd. (C59)—Models 12Q4 and 12QK only |
| 14393 | Capacitor—.01 mfd. (C23, C34, C42, C44, C45, C49) |
| 11315 | Capacitor—.015 mfd. (C62) |
| 30938 | Capacitor—.025 mfd. (C39, C54, C61) |
| 4886 | Capacitor—.05 mfd. (C37, C38) |
| 4839 | Capacitor—0.1 mfd. (C40, C43, C48) |
| 12484 | Capacitor—0.25 mfd. (C57, C58, C60, C63, C68) |
| 5212 | Capacitor—16 mfd. (C55, C56) |
| 31845 | Coil—"A" band antenna coil (L7, L8) |
| 31257 | Coil—"A" band oscillator coil (L12) |
| 31891 | Coil—"A" and "X" bands r-f coil (L20, L21, L22) |
| 14949 | Coil—"B" band antenna coil (L5, L6) |
| 31890 | Coil—"B" and 49-meter bands oscillator coil (L18) |
| 14952 | Coil—"B" band r-f coil (L27) |
| 14950 | Coil—"C" band antenna coil (L3, L4) |
| 31255 | Coil—"C" or 31-meter band oscillator coil (L11, L17) |
| 14953 | Coil—"C" band r-f coil (L26) |
| 31892 | Coil—"X" band antenna coil (L9, L10) |
| 31812 | Coil—"X" band oscillator coil (L13) |
| 31852 | Coil—19-meter band oscillator coil (L15, L16) |
| 31254 | Coil—25-meter band oscillator coil (L14) |
| 14951 | Coil—49, 31, 25, and 19-meter bands antenna coil (L1, L2) |
| 31846 | Coil—49, 31, 25, and 19-meter bands r-f coil (L19) |
| 31843 | Condenser—3-gang variable tuning condenser (C5, C13, C32) |
| 31278 | Cord—Band indicator drive cord |
| 31927 | Cord—Variable condenser drum drive cord |
| 31787 | Drive—Two-speed drive and mounting bracket |
| 31273 | Drum—Variable condenser drive drum |
| 31928 | Indicator—Band indicator strip |
| 11891 | Lamp—Dial lamp |
| 31480 | Lamp—Dial lamp (center) |
| 14028 | Nut—Jamb nut for capacitor, Stock Nos. 12714, 12884, and 12807 |
| 31817 | Plate—Cushion socket mounting plate—less socket |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31788 | Pulley—Two speed drive pulley |
| 31280 | Pulley—Indicator pointer cable pulley |
| 31272 | Pulley—Range switch shaft pulley |
| 31851 | Resistor—Voltage divider—comprising one 1,500-ohm, one 4,200-ohm, one 6,000-ohm, one 25-ohm, and one 150-ohm sections (R21, R22, R23, R24, R25) |
| 14720 | Resistor—1,000 ohms, ½ watt (R10, R11) |
| 31920 | Resistor—1,800 ohms, 1/10 watt (R8) |
| 12955 | Resistor—3,900 ohms, ½ watt (R6) |
| 30128 | Resistor—12,000 ohms, ½ watt (R9) |
| 13998 | Resistor—22,000 ohms, ½ watt (R27) |
| 12738 | Resistor—27,000 ohms, ½ watt (R28) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2, R3, R5) |
| 5132 | Resistor—47,000 ohms, 1/10 watt (R12) |
| 14560 | Resistor—100,000 ohms, ½ watt (R7, R14, R15, R18, R19, R34) |
| 12264 | Resistor—220,000 ohms, ½ watt (R26, R30) |
| 12199 | Resistor—270,000 ohms, ½ watt (R31, R41)—R41 in Model 12QU only |
| 11453 | Resistor—270,000 ohms, 1/10 watt (R16, R17) |
| 12486 | Resistor—560,000 ohms, ½ watt (R13) |
| 30963 | Resistor—820,000 ohms, ½ watt (R42)—Model 12QU only |
| 12013 | Resistor—1 meg., 1/10 watt (R32, R33) |
| 13730 | Resistor—1 meg., ½ watt (R1, R4) |
| 30208 | Resistor—1.2 meg., ½ watt (R40)—Model 12QU only |
| 12679 | Resistor—2.2 meg., ½ watt (R20) |
| 14887 | Retainer—Pulley retainer |
| 4669 | Screw—No. 8-32 sq. hd. set screw for drum, Stock No. 31273, and pulley, Stock No. 31272 and Stock No. 31788 |
| 14404 | Socket—7-contact male socket for power input |
| 31364 | Socket—Dial lamp socket |
| 14278 | Socket—Phonograph input socket |
| 13871 | Socket—Magic Eye socket |
| 31251 | Socket—Tube socket |
| 31279 | Spring—Band indicator tension spring |
| 31418 | Spring—Drum drive cord tension spring |
| 13638 | Spring—Indicator pointer drive cable tension spring |
| 31849 | Switch—Fidelity switch—Models 12Q4 and 12QK only (S7, S8) |
| 31961 | Switch—Fidelity switch (S20, S21, S22, S23)—Model 12QU only |
| 31844 | Switch—Range switch—less coils (S1, S2, S3, S4, S5, S6) |
| 30953 | Switch—S.P.S.T. sensitivity switch (S10) |
| 31850 | Tone and power switch (S9, S11) |
| 31746 | Transformer—First i-f transformer (L23, L24, L25, C35, C36) |
| 31749 | Transformer—Second i-f transformer (L28, L29, L30, C46, C47) |
| 31268 | Transformer—Third i-f transformer (L31, L32, C50, C51) |
| 31847 | Transformer—Output transformer (T1) |
| 31848 | Volume control (R29) |
| | **SPEAKER ASSEMBLIES** (Speaker RL70H-3) |
| 31825 | Cap—Speaker cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L34) |
| 11234 | Coil—Speaker field coil (L33) |
| 31275 | Cone—Speaker cone and voice coil (L35) |
| 31830 | Plug—4-contact male plug for speaker |
| 31853 | Speaker complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 13103 | Cap—Pilot lamp cap (bullseye)—Model 12QU only |
| 31541 | Cushion—Motor plate mounting cushion and clamp assembly (sufficient for one instrument—Model 12QU only |
| 31962 | Dial—Dial scale and crystal—Model 12QU only |
| 31855 | Dial—Dial scale and crystal—Models 12Q4 and 12QK only |
| 31921 | Escutcheon—Dial escutcheon less dial scale and crystal—Model 12QU only |
| 31854 | Escutcheon—Dial escutcheon less dial scale and crystal—Models 12Q4 and 12QK only |
| 30698 | Hinge—Cabinet lid hinge—Model 12QU only |
| 31564 | Holder—Needle card holder—Model 12QU only |
| 31717 | Indicator—Dial indicator pointer, carriage, and clip assembly—Model 12QU only |
| 31714 | Indicator—Dial indicator pointer—Models 12Q4 and 12QK only |
| 31355 | Knob—Station selector, volume control, tone control, range switch, or fidelity switch knob—Model 12QU only |
| 31802 | Knob—Station selector, volume control, tone control, range switch, or fidelity switch knob—Models 12Q4 and 12QK only |
| 30868 | Plug—2-contact female plug for speaker cable |
| 30868 | Plug—2-contact female plug for motor power cable—Model 12QU only |
| 30870 | Plug—2-contact male plug for speaker cable |
| 31287 | Rod—Pointer carriage slide rod |
| 31559 | Screen—Dial color screen and light diffuser—Model 12QU only |
| 31285 | Screen—Dial color screen and light diffuser—Model 12Q4 and 12QK only |
| 31558 | Spring—Pointer carriage stop spring |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 31355 and 31802 |
| 11830 | Support—Cabinet lid support—Model 12QU only |
| 31470 | Suspension—Motorboard suspension springs, screw, and washer (4 required)—Model 12QU only |

# MODEL U-12

## Chassis No. RC-425-A

## Seven-Tube, Two-Band, AC, Superheterodyne Victrola

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ..... 540-1,720 kc
Short Wave ..... 5.6-20 mc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SA7 .. 1st. Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 .. 2nd. Detector, A.V.C., and A-F Amplifier
(4) RCA-6SF5 ..... Inverter
(5) RCA-6F6-G ..... Power Output
(6) RCA-6F6-G ..... Power Output
(7) RCA-5Y3-G ..... Rectifier

PILOT LAMPS (1) ..... Mazda No. 51, 6.3 volts, 0.20 amp.

POWER OUTPUT RATING

Undistorted ..... 5.0 watts
Maximum ..... 6.0 watts

LOUDSPEAKER (RL-79A-1)

Type ..... 6-inch electrodynamic
V.C. Impedance ... 3.4 ohms at 400 cycles

PHONOGRAPH

Crystal Pickup . 100,000 ohms Impedance at 1,000 c.p.s.

Average Output of Pickup .. 1½ volts at 1,000 c.p.s. across 250,000 ohms load

Motor ... Self-starting, Rim drive, Adjustable speed

POWER SUPPLY RATINGS

Rating A-6 ... 105-125 volts, 60 cycles, 110 watts

Rating A-5 ..... 105-125 volts, 50 cycles, 110 watts

Rating C-6 ... 105-125, 210-250 volts, 60 cycles, 110 watts

Rating C-5 .... 105-125, 210-250 volts, 50 cycles, 110 watts

## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up for any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Set the receiver for "Radio" operation, range selector on "Broadcast", and accurately tune in the station for which the first button is to be set.

3. Press in the first push-button rod (left) with the screwdriver as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

6. Insert the station marker tabs in the recesses above the push-buttons.

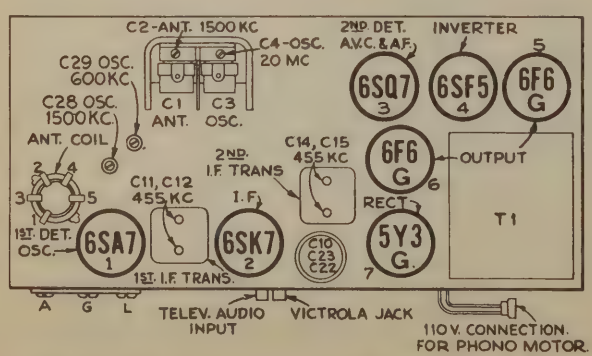
## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid A.V.C. action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, 6.1 mc, and 20 kc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

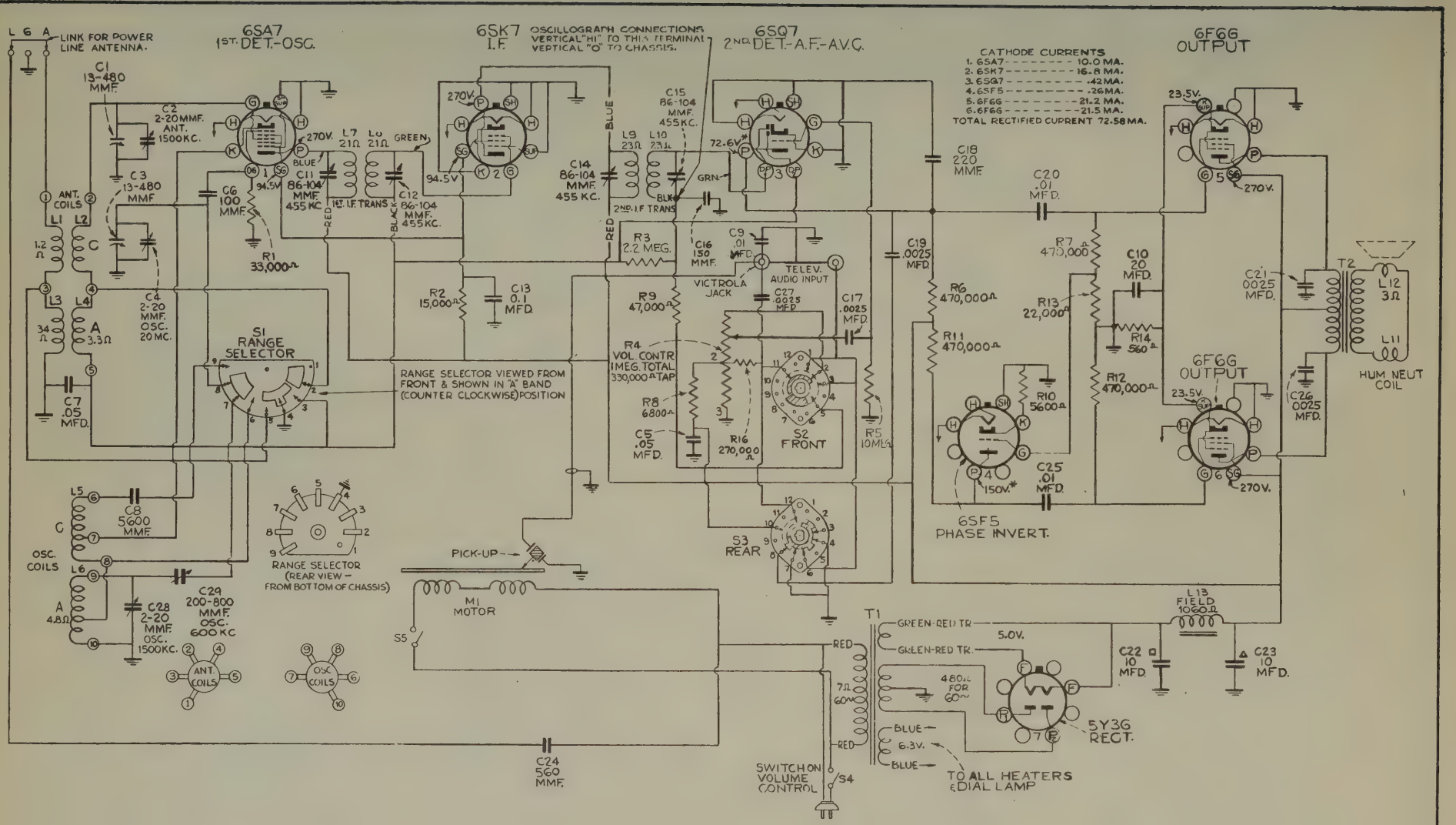



Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the mark at the extreme left (low frequency) end of the dial scale.

| Step | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Antenna terminal | 455 kc | "A" Band Quiet Point between 550-750 kc | C14 and C15 (2nd I-F Trans.) |
| 2 | | | | C11 and C12 (1st I-F Trans.) |
| 3 | Ant. terminal in series with 300 ohms | 20 mc | "C" Band 20 mc calibration mark | C4 (osc.)* |
| 4 | Ant. terminal in series with 200 mmf. | 1,500 kc | "A" Band 1,500 kc calibration mark | C28 (osc.) C2 (ant.) |
| 5 | | 600 kc | "A" Band 600 kc calibration mark | C29 (osc.) Rock Gang |
| 6 | Repeat step 4 | | | |

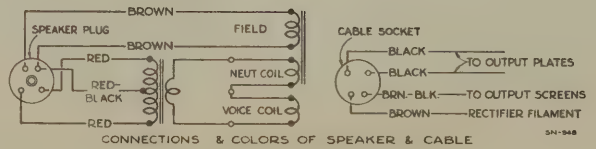
* Use minimum peak if two can be obtained. Check to determine that C4 has been adjusted properly by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

Note: Oscillator tracks above signal on both bands.




**Precautionary Lead Dress.—**

1. Dress the Power Line Antenna lead close to the chassis base and near to the back flange.
2. Heater lead from 6F6-G to the 6SQ7-G must be dressed away from the 10 meg. grid leak (R5).
3. AC leads to the power switch must be dressed away from R8 and C5.
4. C17 should be kept as far away from the power switch as possible.



CONNECTIONS & COLORS OF SPEAKER & CABLE

# Miscellaneous Service Data

### Phonograph Mechanism:

The phonograph motor is self-starting and operates the turntable through friction drive between the motor spindle and the rubber tire on the underside of the turntable.

The rubber driving tire on the turntable should never be removed since it is ground in to be concentric with the spindle.

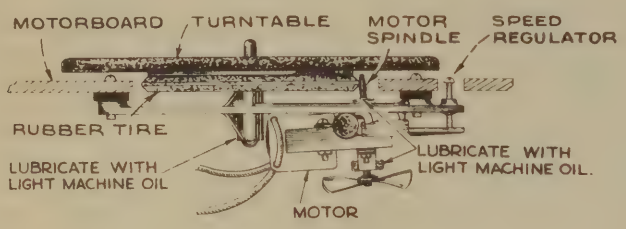
The speed regulator raises and lowers the motor. This changes the driving ratio between the motor and the turntable due to the motor spindle being conical in shape. It is important to adjust this regulator for a turntable speed of 78 r.p.m. WHILE PLAYING A 10-INCH RECORD WITH THE NEEDLE APPROXIMATELY ONE INCH FROM THE OUTER EDGE OF THE RECORD.

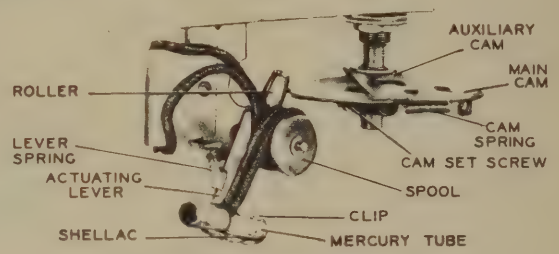
The motor switch is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1¾ inches from the center line of the turntable shaft. The motor may be shut off at any time by placing the pickup on the pickup rest.

Lubrication.—The motor should be lubricated as follows: Place a few drops of S.A.E. 20 (or equivalent) on the turntable spindle and saturate the oil retaining felt pads on the motor shaft with S.A.E. 10 oil. This oiling process should be repeated once or twice a year. **CAUTION.—THE MOTOR DRIVE SPINDLE AND RUBBER DRIVING TIRE ON THE TURNTABLE MUST BE KEPT CLEAN AND ENTIRELY FREE FROM OIL AND GREASE AT ALL TIMES.**

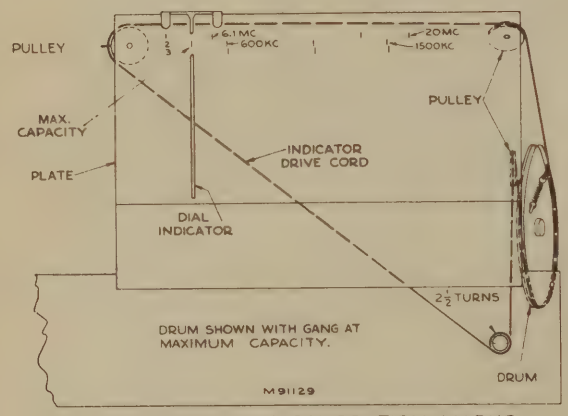
### Power Line Antenna:

This instrument is equipped with a built-in power line antenna. To use this antenna the link on the antenna terminal board should be connected between "A" and "L," thus connecting the antenna input of the receiver through a capacitor to the power line. If an external antenna is used, it should be connected to "A," a ground connection made to "G," and the link removed.

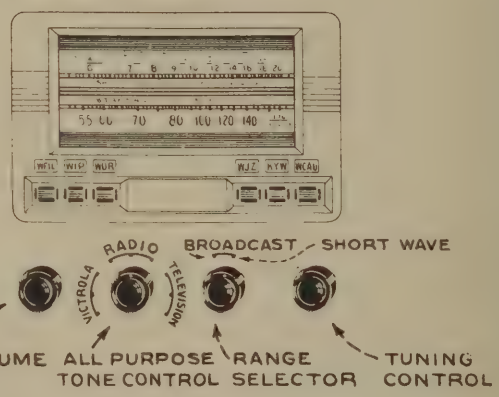



MERCURY SWITCH MECHANISM
(VIEWED FROM FRONT
SHOWN WITH PICKUP IN REST POSITION)




DIAL MECHANISM AND CALIBRATION MARKS.




### 2nd Production:

The following revisions were made in the 2nd production of Model U-12:

(a) C7 changed from .05 mfd. to .01 mfd. (Stock No. 4937).
(b) C5 changed from .05 mfd. to .025 mfd. (Stock No. 4870).
(c) R8 changed from 6,800 ohms to 15,000 ohms (Stock No. 12695).
(d) R3 changed from 2.2 megs. to 5.6 megs. (Stock No. 11668).
(e) R16 changed from 270,000 ohms to 560,000 ohms (Stock No. 12486).
(f) R4 (volume control) changed from 1 meg. to 2 megs., tapped at 500,000 ohms (Stock No. 34796).
(g) R18, 56,000 ohms (Stock No. 12286), added from Victrola jack to chassis.
(h) R17, 820,000 ohms (Stock No. 30963), added from bottom end of R9 to chassis.
(i) C30, .005 mfd. (Stock No. 33584), added between R9 and contact 5 on S2.
(j) C27 (from Victrola jack) is omitted.
(k) Contact 5 on S2 is connected to contact 3 on S3.
(l) DP2 on 6SQ7 was connected to left-hand end of R3. This connection is removed, and DP2 is grounded.

### Turntable Wobble:

Turntables (Stock No. 33899) found to have excessive wobble (vertical run-out) may be trued-up in the following manner:

(a) Obtain a motor bearing, Stock No. 31046 (used in R93-B) and clamp same securely in a vise.
(b) Place turntable spindle in this bearing and make sure that turntable spins freely.
(c) With turntable spinning, the high side can readily be determined by use of a piece of chalk carefully lowered so that it just touches the high spot of the turntable, leaving a mark.
(d) With both hands grasp the rim of the turntable, thumbs on top and index fingers underneath turntable at the center of the chalk mark.
(e) Apply a moderate amount of pressure in a downward direction at right angle to the jaws of the vise.
(f) Spin turntable again and if still running out, repeat operation mentioned under (c), continuing by trial until turntable runs true.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-425A)** |
| 33719 | Belt—Tuning unit push arm belt |
| 33718 | Board—Antenna-ground board |
| 33629 | Capacitor—Trimmer capacitor, one section 2-20 mmfd., and one section 300-800 mmfd. (C9, C10) |
| 12720 | Capacitor—100 mmfd. (C6) |
| 12725 | Capacitor—150 mmfd. (C16) |
| 12694 | Capacitor—220 mmfd. (C18) |
| 12537 | Capacitor—560 mmfd. (C24) |
| 13895 | Capacitor—5,600 mmfd. (C8) |
| 5107 | Capacitor—.0025 mfd. (C19, C21, C26) |
| 34459 | Capacitor—.0025 mfd. (C17, C27) |
| 4937 | Capacitor—.01 mfd. (C9, C20, C25) |
| 32787 | Capacitor—.05 mfd. (C7) |
| 4839 | Capacitor—0.1 mfd. (C13) |
| 32240 | Capacitor—Comprising 2 sections of 10 mfd., and 1 section of 20 mfd. (C10, C22, C23) |
| 33732 | Coil—Antenna coil (L1, L2, L3, L4) |
| 33733 | Coil—Oscillator coil (L5, L6) |
| 33776 | Control—Volume control and power switch (R4, S4) |
| 32634 | Cord—Braided silk drive cord |
| 33633 | Indicator—Station selector indicator pointer |
| 11765 | Lamp—Pilot lamp |
| 33727 | Plate—Dial plate assembly—less dial |
| 5119 | Plug—4-contact female plug for speaker cable |
| 14439 | Resistor—100 ohms, ½ watt (R15) |
| 17214 | Resistor—560 ohms, 2 watts (R14) |
| 13714 | Resistor—5,600 ohms, ½ watt (R10) |
| 12265 | Resistor—6,800 ohms, ½ watt (R8) |
| 33489 | Resistor—15,000 ohms, 2½ watts (R2) |
| 13998 | Resistor—22,000 ohms, ½ watt (R13) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12412 | Resistor—47,000 ohms, ½ watt (R9) |
| 12199 | Resistor—270,000 ohms, ½ watt (R16) |
| 12285 | Resistor—470,000 ohms, ½ watt (R6, R7, R11, R12) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 13601 | Resistor—10 meg., ½ watt (R5) |
| 33735 | Screw—Push button lock screw |
| 33725 | Shaft—Tuning drive shaft |
| 33514 | Socket—Phonograph input socket |
| 31364 | Socket—Pilot lamp socket |
| 31319 | Socket—Tube base socket |
| 33720 | Spring—Push arm return spring |
| 33946 | Switch—Range switch |
| 33894 | Switch—Tone control, phono. or television switch (S2, S3) |
| 33722 | Transformer—First i-f transformer (L7, L8, C11, C12) |
| 33895 | Transformer—Second i-f transformer (L9, L10, C14, C15) |
| 33619 | Transformer—Power transformer—105-125 volts, 25-60 cycles (T1) |
| 34261 | Transformer—Power transformer—110 volts, 60 cycles |
| 31575 | Transformer—Power transformer—105-125, 200-250 volts, 50-60 cycles (T1) |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES** |
| 33897 | Base—Motor base and ball assembled |
| 33902 | Motor—Complete motor 105-125 volts, 60 cycle (M1) |
| 34496 | Motor—Complete motor 105-125 volts, 50 cycle (M1) |
| 33896 | Mounting—Motor cradle mounting hardware and retainer |
| | **SPEAKER ASSEMBLIES (RL-79A-1)** |
| 32907 | Cap—Dust cap |
| 33601 | Coil—Field coil (L13) |
| 32906 | Coil—Neutralizing coil (L11) |
| 5039 | Plug—4-prong male speaker plug |
| 33599 | Transformer—Output transformer (T2) |
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 32863 | Cam—Cam assembly comprising main and auxiliary cam, hub and set screws |
| 32864 | Lever—Actuating lever with roller and mercury switch clip |
| 31118 | Screw—No. 10-32 x 5/16 fillister head cone pointed set screw |
| 32868 | Spring—Actuating lever tension spring |
| 32867 | Spring—Cam tension spring |
| 32865 | Support—Switch support and terminal board |
| 32866 | Switch—Mercury tube with leads (S5) |
| 31608 | Washer—"C" washer for holding actuating lever |
| | **PICKUP ASSEMBLIES** |
| 33906 | Arm—Pickup arm—shell only |
| 33908 | Base—Pickup support arm base and retainer |
| 33905 | Crystal—Pickup crystal cartridge |
| 33907 | Support—Pickup support arm complete—less base |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33731 | Button—Push button assembly |
| 31456 | Cover—8-protective covers for push button marker |
| 33910 | Cup—New needle cup |
| 33909 | Cup—Used needle cup |
| 34270 | Dial—Glass dial scale |
| 33637 | Escutcheon—Dial glass escutcheon |
| 13085 | Hinge—Cabinet lid hinge |
| 33942 | Knob—Tone control or range switch knob |
| 30863 | Knob—Tuning or volume control knob |
| 33973 | Marker—Push button markers |
| 33901 | Mounting—1 set motor mounting hardware |
| 33530 | Mounting—Pickup mounting hardware |
| 30870 | Plug—2-prong male connectors |
| 31048 | Plug—2-conductor male plug for pickup lead |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 30863, 33942 and button No. 33731 |
| 31164 | Support—Cabinet lid support |
| 33899 | Turntable—Complete with rubber drive ring |

**Additional Replacement Parts:**

Stock No.

32654 Ball—Ball for turntable bearing
35441 Cone—Speaker cone complete with voice coil, center suspension, and rim gaskets
33974 Screw—Pickup needle screw
30585 Spring—Indicator drive cord spring.

**Turntable Assembly Stock No. 33899:**

The turntable and tire assembly Stock No. 33899 is superseded by:

Stock No. 37971—Turntable and spindle, less tire

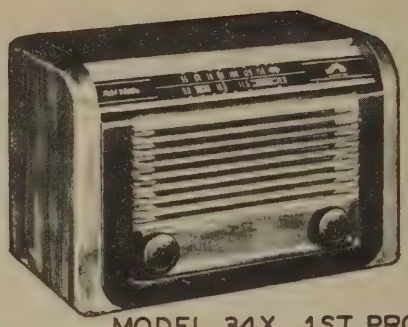
Stock No. 37872—Tire only

# MODELS 14AX, 14AX2, 14X, 14X2 & 34X AND RADIOLA 526 & 527

## Five-Tube, Two-Band, AC-DC, Superheterodyne Receivers

MODELS 14AX2, 14X2 — IVORY

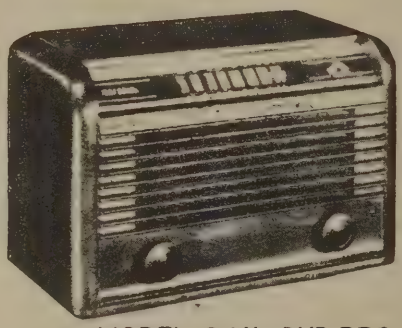
MODELS 14AX, 14X — WALNUT



MODEL 34X 1ST. PRO.

RADIOLA 526

RADIOLA 527



MODEL 34X 2ND. PRO.

## Electrical Specifications

FREQUENCY RANGE

Broadcast Band ..... 535-1,720 kc
Short Wave Band ..... 8.9 mc to 12 mc.

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7..... 1st Det.—Osc.
(2) RCA-12SK7..... I-F Amplifier
(3) RCA-12SQ7.....2nd Det., A.V.C., and A-F Amplifier
(4) RCA-50L6-GT..... Power Output
(5) RCA-35Z5-GT..... Rectifier

PILOT LAMP..... Mazda No. 51, 6-8 volts, 0.2 amp.

POWER OUTPUT

Undistorted ..... .9 watts
Maximum ..... 1.3 watts

LOUDSPEAKER

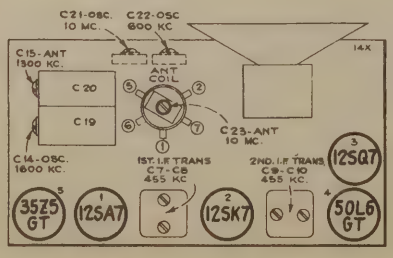
Type..... 5-inch permanent-magnet dynamic
V.C. Impedance..... 3.3 ohms at 400 cycles
Type..... 5-inch electro dynamic
V.C. Impedance..... 4.0 ohms at 400 cycles

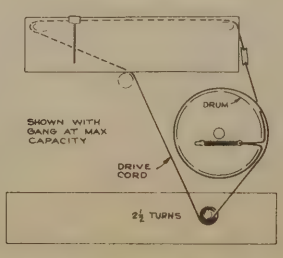
POWER SUPPLY RATING

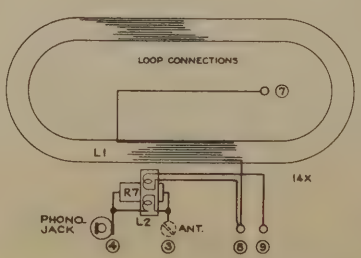
105-125 volts, AC 50 or 60 cycles, or DC..... 25 watts

## IDENTIFICATION OF MODELS

| | | | |
|---|---|---|---|
| 14AX | RC-100 IE | 34X | RC-100 IE |
| 14AX2 | RC-100 IE | 34X | RC-1022 |
| 14X | RC-100 ID | 526 | RC-100 IE |
| 14X2 | RC-100 ID | 527 | RC-100 IE |



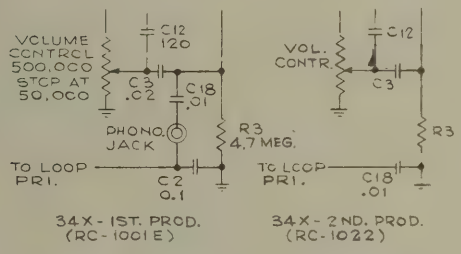
## VARIATIONS OF MODELS

Model 14 AX and 14 $AX_2$ - Changes as listed below.
Model 14 X and 14 $X_2$ - R8 and $C_{21}$ omitted.
Model 34 X (2nd Prod. RC-1022) - Phono. jack and $C_2$ omitted. Connections as illustrated below.

### 14AX, 14AX-2

**Changes in 2nd Production:**

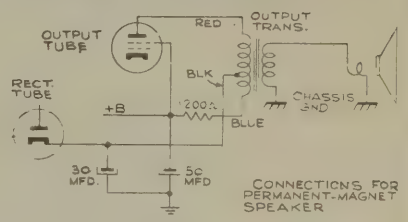
C3, in grid circuit of 12SQ7, is changed from .015 to .02 mfd., Stock No. 36248.
C5, in 50L6GT plate circuit, is changed from .025 to .02 mfd., Stock No. 36248.
C21, chassis ground to power ground, is changed from .2 to .1 mfd., Stock No. 4839.




*Circuit Changes, 2nd Production 34X*

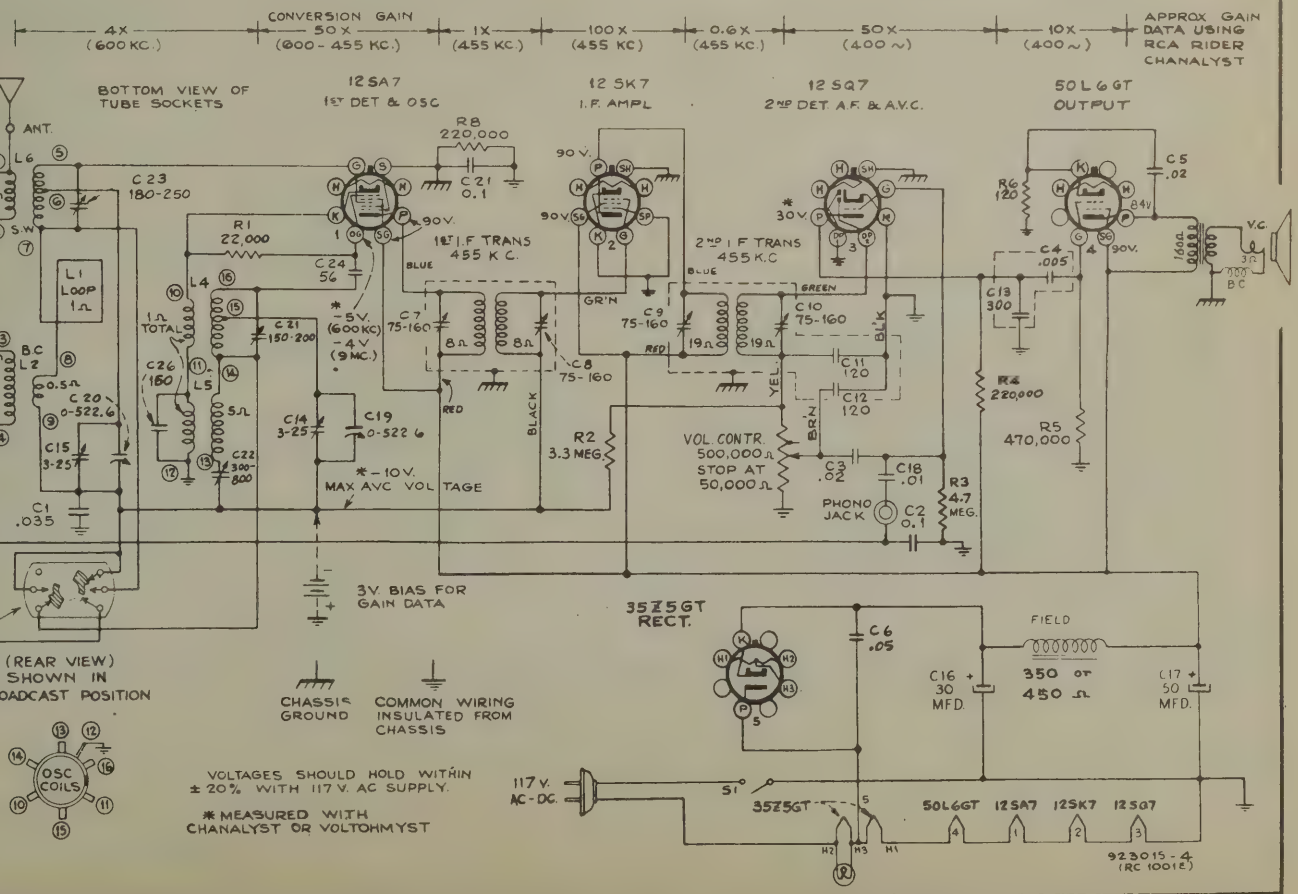
## SUBSTITUTE SPEAKERS 14AX, 14AX-2 14X, 14X-2

| NUMBER STAMPED ON SPEAKER | CONE AND VOICE COIL STOCK No. | FIELD COIL STOCK No. | Output Trans Stock No. |
|---|---|---|---|
| RL-86-A3 | 35570 | 39543 | 38994 |
| RL-86-B1 | 39447 | 39448 | 38994 |
| RL-86-B4 | 39447 | 39448 | 38994 |
| 92161-3 | 38352 | PM | 36800 |
| 92161-4 | 39535 | PM | 36900 |
| 92161-5 | 38352 | PM | 36800 |
| 92322-2 | 39536 | PM | 36800 |
| 92374-1 | 3953 | PM | 36800 |




NOTE: *50L6GT Plate Voltage is 115 volts when using "PM" Speaker.*

*Circuit for "PM" Speakers*



**Output Meter Alignment.**—If this method is used connect the meter across the voice coil and turn the receiver volume control to maximum.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

**Test Oscillator.**—Connect the low side of the test oscillator to the receiver chassis through a .01 mfd. capacitor. When the electronic voltmeter is used as an alignment indicator the output of the test oscillator should be adjusted to produce several volts of AVC. With the output meter alignment method the test oscillator output should be kept as low as possible.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

**Precautionary Lead Dress.—**

1. Dress the power cable to switch on the volume control close to the chassis and away from all grid and diode leads and condensers.
2. Dress capacitors in the 12SQ7 grid circuit away from all wiring.
3. Green and black phono wires should be twisted and dressed away from other parts and leads.
4. 50L6-GT filament wires should be dressed to rear of chassis and away from the second I-F transformer leads.
5. Dress brown lead from second I-F transformer to 12SQ7 away from power cable.
6. Dress wire to No. 1 grid of the 12SA7 away from pilot lamp leads.
7. Dress wire from loop to variable condenser away from chassis.
8. Dress all capacitors, leads, etc. which come close to oscillator coil rigidly and as far as possible from it.

## Alignment Procedure

| Steps | Connect the high side of test-oscillator to— | Tune test-os. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 grid in series with 0.1 mfd. | 455 kc | Quiet Point at 1,600 kc end of dial | C10, C9 2nd I-F Transformer |
| 2 | 12SA7 grid in series with 0.1 mfd. | | | C8, C7 1st I-F Transformer |
| 3 | Antenna term. in series with 47 mmf. | 10 mc* | 10 mc | C21 (osc.)** C23 (ant.) |
| 4 | Antenna term. in series with 200 mmfd. | 1,600 kc | 1,600 kc | C14 (osc.) |
| 5 | Radiation Loop | 1,300 kc | Resonance on Signal | C15 (ant.) |
| 6 | Radiation Loop | 600 kc | 600 kc | C22 Osc. Rock in |

*** It is recommended that this step be repeated using a received station of known frequency.**

**** Use minimum capacity if two peaks can be obtained.**

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

## Replacement Parts MODEL 14X SERIES

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES Model 14AX (RC-1001E)** |
| 37961 | Capacitor—Mica trimmer—180-250 mmfd. for antenna coil |
| 37904 | Capacitor—Mica trimmer comprising 1 section of 300-800 mmfd. and 1 section of 200-280 mmfd. |
| 37359 | Capacitor—1 section of .005 mfd. and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 50 mfd. 150 volts, and 1 section of 30 mfd. 150 volts |
| 37960 | Coil—Antenna coil—less mica trimmer |
| 37959 | Coil—Oscillator coil |
| 37962 | Coil—Loop primary coil |
| 37901 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall lgth.) |
| 37068 | Indicator—Station selector indicator |
| 31193 | Lead—Antenna lead |
| 37902 | Loop—Antenna loop |
| 37351 | Plate—Dial back plate complete with pulleys |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 30189 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 37903 | Switch—Range switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer — less shield can |
| 36800 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **SPEAKER ASSEMBLIES (RL-81B2)** |
| 35570 | Cone—Cone complete with voice coil |
| 37612 | Speaker—5-inch permanent magnet speaker complete with cone and voice coil—less output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37906 | Back—Cabinet back cover |
| 37362 | Clamp—Dial clamp |
| 37910 | Dial—Glass dial scale |
| 37831 | Fastener—Push-on fastener for cabinet back |
| 37361 | Knob—Walnut tuning or volume control knob |
| 35121 | Knob—Walnut range switch knob |
| 11765 | Lamp—Dial lamp |
| 37909 | Mounting—Handle mounting hardware including 2 screws, 2 washers, 2 springs, and 2 felt washers |
| 30900 | Spring—Retaining spring for knobs, Stock No. 37361 |

### 14AX2 (RC-1001E)

**Service Data:**

The Service Data for Model 14AX applies to Model 14AX2, except for the following parts used in 14AX2:

**Stock No.**

86801 Coil—Oscillator coil
37353 Condenser—Variable tuning condenser
38816 Back—Cabinet back
Y1140 Cabinet
35071 Knob—Control knob

RL-86-A3 "EM" speaker is used in some production of 14AX2, as specified elsewhere

### 14X (RC-1001D)

**Service Data:**

The Service Data for Model 14AX applies to Model 14X except for the following parts used in 14X:

Stock No. *Omit*

34505 Capacitor - 0.2 mfd
35121 Knob

*Add*

35392 Decal - Trademark decal
32895 Knob - Walnut range switch knob

### 14X2 (RC-1001D)

**Service Data:**

The Service Data for Model 14X applies to Model 14X2, except for the following parts used in 14X2:

**Stock No.**

38816 Back—Cabinet back
Y1140 Cabinet
35071 Knob—Control knob

RL-86-A3 "EM" speaker is used in some production of 14X2, as specified elsewhere

14AX, 14AX2, 14X, 14X2, 34X, 526, 527

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1001E)** |
| 37961 | Capacitor—Mica trimmer—180-250 mmfd. for antenna coil |
| 37904 | Capacitor—Mica trimmer comprising 1 section of 300-800 mmfd., and 1 section of 200-280 mmfd |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 50 mfd., 150 volts, and 1 section of 30 mfd., 150 volts |
| 37960 | Coil—Antenna coil—less mica trimmer |
| 37959 | Coil—Oscillator coil |
| 37962 | Coil—Loop primary coil |
| 37901 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall lgth.) |
| 37068 | Indicator—Station selector indicator |
| 31193 | Lead—Antenna lead |
| 37902 | Loop—Antenna loop |
| 37351 | Plate—Dial back plate complete with pulleys |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 30189 | Resistor—120 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 37903 | Switch—Range switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer — Second I.F. transformer — less shield can |
| 38994 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **SPEAKER ASSEMBLIES (RL-86B-1)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil—350 ohms |
| 39447 | Cone—Cone complete with voice coil |

| STOCK No. | DESCRIPTION |
|---|---|
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required. |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39776 | Back—Cabinet back |
| 39779 | Dial—Glass dial scale |
| 33006 | Feet—Rubber feet—Pkg. of 4 |
| 35179 | Knob—Range switch knob |
| 36722 | Knob—Tuning or volume control knob |
| 11765 | Lamp—Dial lamp |
| 30900 | Spring—Retaining spring for knobs |

## 34X—2ND PROD. (RC-1022)

**Service Data:**

For replacement parts list, refer to the Service Notes for 34X (RC-1001-E) with the exception of the following parts used in the 34X—2nd Production (RC-1022):

| Stock No. | Description |
|---|---|
| 35348 | Capacitor—Electrolytic, comprising 1 section of 20 mfd., 150 volts (C17), and 1 section of 30 mfd., 150 volts (C16) |
| 12723 | Capacitor—56 mmf. |
| 39628 | Capacitor—100 mmf. |
| 36248 | Capacitor—.02 mfd. |
| 34298 | Capacitor—0.1 mfd. |
| 34662 | Cord—Drive cord (approx. 33-in. overall length) |
| 35078 | Knob—Range switch knob |
| 39822 | Loop—Antenna loop |
| 31251 | Socket—Tube socket—wafer |
| 37605 | Socket — Tube socket — moulded |
| 37364 | Transformer — Second I. F. transformer |
| | **SPEAKER ASSEMBLIES (RL-86B-1 & RL-86B-4)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil—350 ohms. |
| 39447 | Cone—Cone complete with voice coil (92379-1) |
| 39995 | Coil—Field coil—350 ohms. |
| 39994 | Cone—Cone complete with voice coil |

# Replacement Parts RADIOLA 526 & 527

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

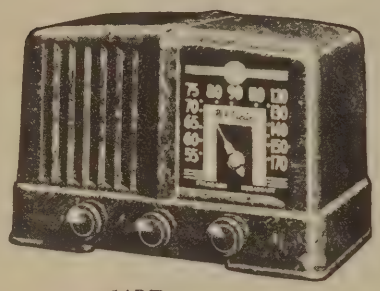
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1001E)** |
| 37961 | Capacitor—Mica trimmer—180-250 mmfd. for antenna coil |
| 37904 | Capacitor—Mica trimmer comprising 1 section of 300-800 mmfd. and 1 section of 150-200 mmfd. |
| 37359 | Capacitor—1 section of .005 mfd. and 1 section of 300 mmfd. |
| 14393 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 50 mfd., 150 volts, and 1 section of 30 mfd., 150 volts |
| 37960 | Coil—Antenna coil—less mica trimmer |
| 37959 | Coil—Oscillator coil |
| 37962 | Coil—Loop primary coil |
| 37901 | Condenser—Variable tuning condenser |
| 36584 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall length) |
| 37068 | Indicator—Station selector indicator |
| 31193 | Lead—Antenna lead |
| 37902 | Loop—Antenna loop |
| 37351 | Plate—Dial back plate complete with pulleys |
| 36230 | Pulley—Drive cord pulley |
| 37355 | Receptacle—Receptacle and terminal board |
| 30189 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |

| STOCK No. | DESCRIPTION |
|---|---|
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 37352 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 37903 | Switch—Range switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer—less shield can |
| 38994 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **SPEAKER ASSEMBLIES (RL86A3)** |
| 35570 | Cone—Cone complete with voice coil |
| 39543 | Field Coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37906 | Back—Back cover for Model 526 |
| 39454 | Back—Cabinet back for Model 527 |
| 37362 | Clamp—Dial clamp |
| 38812 | Dial—Glass dial scale |
| 37831 | Fastener—Push fastener for cabinet back |
| 39004 | Handle—Carrying handle for cabinet |
| 38810 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 14270 | Spring—Retaining spring for knob |

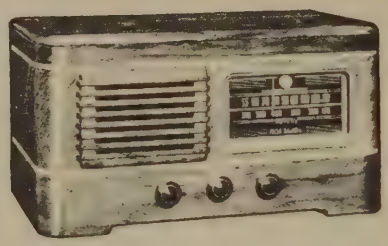
# MODELS 14BT1, 14BT2 and 14BK

## Chassis Nos. RC-525, 525A, 525B

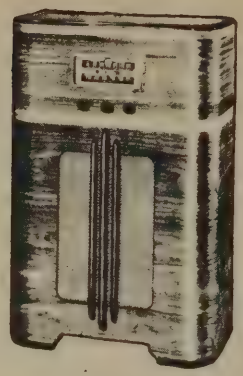
## Four-Tube, Single-Band, Battery-Operated, Receivers



*14BT1*



*14BT2*



*14BK*

## Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

RCA Tube Complement
(1) RCA-1A7-GT ..... 1st-Det.—Osc.
(2) RCA-1N5-GT ..... I-F Amplifier
(3) RCA-1H5-GT ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-3Q5-GT ..... Output

Batteries Required
1 "A"—"B" Pack (Burgess Type 17GD60 or equivalent).

Current Consumption
"A" 0.25 amperes
"B" { 7.3 m.a. (switch at "Battery Saver" position).
{ 11.8 m.a. (switch at "Music" or "Speech" position).

| Power Output | Switch at "Battery Saver" | Switch at "Music" or "Speech" |
|---|---|---|
| Undistorted | .065 watts | .140 watts |
| Maximum | .180 watts | .250 watts |

Loudspeaker

| | | |
|---|---|---|
| Type | Permanent-magnet | Dynamic |
| Diameter (14BT1, 14BT2) | 5 in. | (14BK) 6 in. |
| Voice Coil Impedance (14BT1, 14BT2) | 4 ohms | (14BK) 3.4 ohms |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 36088 | Bearing—Tuning shaft bearing and nut |
| 35097 | Can—Shield can for I-F transformer Stock No. 36084 |
| 36083 | Can—Shield can for I-F transformer Stock No. 36083 |
| 37814 | Capacitor—9 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 14498 | Capacitor—680 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 33911 | Capacitor—Electrolytic 10 mfd., 150 volts |
| 36085 | Coil—Antenna coil |
| 36092 | Coil—Oscillator coil |
| 36091 | Condenser—Variable tuning condenser Models 14BT2 and 14BK |
| 36079 | Condenser—Variable tuning condenser Model BT1 |
| 36080 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 36093 | Core—Adjustable core and stud for oscillator coil |
| 36087 | Frame—Dial frame complete with pulleys Models 14BT2 and 14BK |
| 36086 | Frame—Dial frame—less dial—Model 14BT1 |
| 35091 | Indicator—Station selector indicator Model 14BT1 |
| 36090 | Indicator—Station selector indicatbr Model 14BT2 and 14BK |
| 34256 | Lamp—Blinker lamp |
| 5119 | Plug—3-prong male plug for speaker cable |
| 30550 | Plug—4-prong male plug for battery cable |
| 32289 | Pulley—Drive cord pulley |
| 12261 | Resistor—390 ohms, ½ watt |
| 12414 | Resistor—560 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13167 | Resistor—3.9 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 36089 | Shaft—Tuning shaft |
| 35787 | Socket—Phono. input socket only |
| 31319 | Socket—Tube socket |
| 33175 | Spring—Drive cord spring |
| 31261 | Spring—Oscillator coil mounting spring |
| 35098 | Spring—Spring to hold transformer in shield can |
| 36081 | Switch—Battery saver and tone switch |
| 36082 | Transformer—First I-F transformer—less shield can |
| 36084 | Transformer—Second I-F transformer—less shield can |
| 34373 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES Model 14BT1, 14BT2 (RL-85-4)** |
| 32907 | Cap—Dust cap |
| 36295 | Cone—Cone complete with voice coil |
| 36098 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (RL-92-3) Model 14BK** |
| 32907 | Cap—Dust cap |
| 36077 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 36098 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35104 | Crystal—Escutcheon and crystal—Model 14BT1 |
| 36099 | Decalcomania—Control marker decal |
| 36100 | Dial—Dial scale—Model 14BTL |
| 36102 | Dial—Glass dial scale—Model 14BK |
| 36101 | Dial—Glass dial scale—Model 14BT2 |
| 35937 | Escutcheon—Dial scale escutcheon—less dial for Model 14BK |
| 35915 | Escutcheon—Dial scale escutcheon—less dial—Model 14BT2 |
| 35678 | Fastener—Push-on fastener for crystal Stock No. 35104 |
| 36297 | Knob—Volume control, power switch, tone switch, or tuning knob |
| 30900 | Spring—Retaining spring for knobs |
| MI-8128 | Adaptor—Cable for 3 separate batteries |

## Alignment Procedure

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1N5-GT grid cap, in series with .01 mfd. | 455 kc | Quiet point between 550-750 kc | C11 and C12 (2nd I-F transformer) |
| 2 | 1A7-GT grid cap, in series with .01 mfd. | 455 kc | | C8 and C9 (1st I-F transformer) |
| 3 | Antenna terminal, in series with 200 mmfd. Connect low side of test-osc. to "G" term. | 1500 kc | 1500 kc | C4 (osc.) C2 (ant.) |
| 4 | | 600 kc | 600 kc | L3 (osc.) Rock in |
| 5 | Repeat steps 3 and 4 | | | |

### Excessive Regeneration:

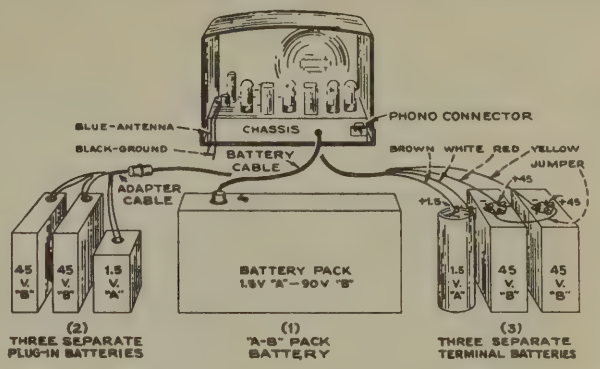
When excessive regeneration occurs in models 14BT-1, 14BT-2, and 14BK, the following procedure should be followed:

(a) Make certain the grounding finger for 1N5GT tube shield is fastened to tube pin No. 1, which is grounded to receiver chassis.

(b) Make certain that the metal rim of 1N5GT socket is soldered to the chassis.

(c) Realign I.F. transformers, using stage-by-stage procedure as specified in service notes, and do not "touch-up" individual trimmers.

(d) Unusually high-gain 1N5GT or 1A7GT tubes should be replaced with tubes having normal gain.




### Precautionary Lead Dress

1. The phono input leads should be dressed away from 3Q5GT output leads.
2. C21 should be dressed away from the 3Q5GT output leads.
3. The lead from the 3Q5GT plate to output transformer should be dressed under clip and away from audio input plate leads.

### Distortion and Loss of Sensitivity:

Some cases of loss of sensitivity, and distortion have been associated with frequency drift. In such an event, correction may be made by:

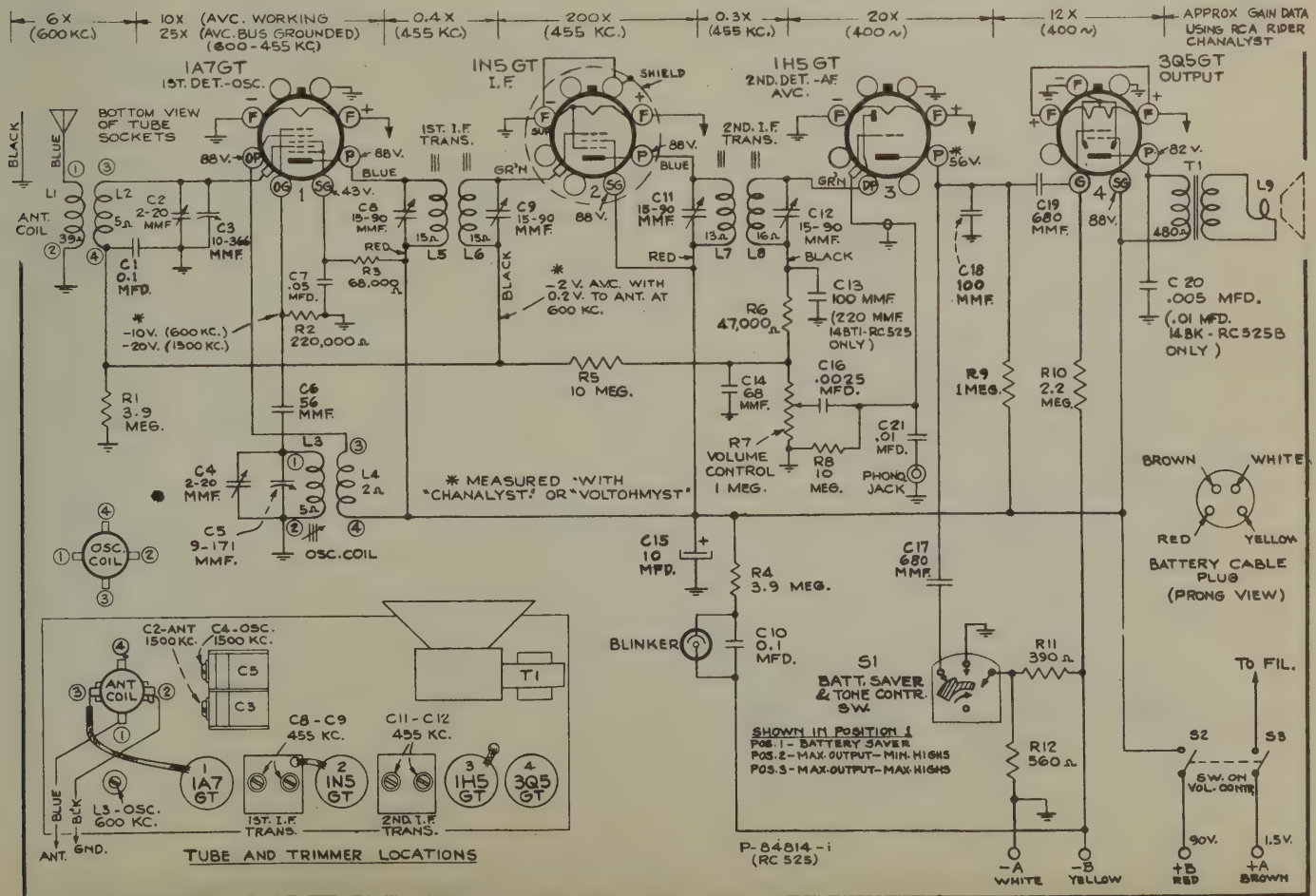
(a) Connecting a 9 mmfd. condenser (RCA Stock No. 37814) from the high side of the oscillator section, at the gang condenser, to ground.

(b) Realigning the 1st detector and oscillator tuned circuits.

(c) Realigning the I.F. circuits if necessary.

### Battery Cable Change:

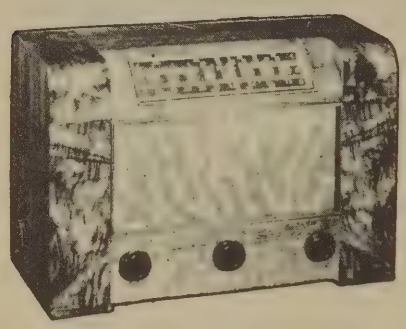
In some 14BT production, the +A wire in the battery cable is black or black with red tracer instead of brown.



# MODELS Q14, Q15 and Q14E, Q15E

**Chassis No. RC-566 RC-566B**

## Five-Tube, Three-Band, AC, Superheterodyne Receiver



*Q14*
*Q14E*

*Q15*
*Q15E*

## Electrical Specifications

**FREQUENCY RANGES**

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (555-174 m) |
| Medium Wave ("B" Band) | 2.3-7.0 mc (130-42.9 m) |
| Short Wave ("C" Band) | 7.0-22.0 mc (42.9-13.6 m) |

**INTERMEDIATE FREQUENCY** ..... 455 kc

**RCA TUBE COMPLEMENT**

| | |
|---|---|
| (1) RCA 6SA7 | 1st Detector-Oscillator |
| (2) RCA 6SK7 | I-F Amplifier |
| (3) RCA 6SQ7 | 2nd Detector AVC, and A.F. Amplifier |
| (4) RCA 6K6GT | Power Output |
| (5) RCA 5Y3G | Rectifier |

**PILOT LAMP** ..... Mazda 44

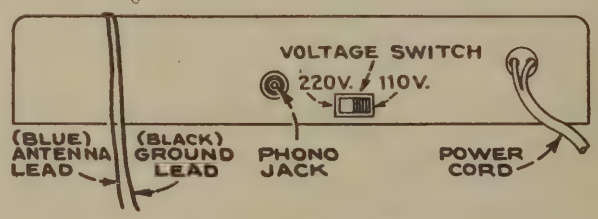
**POWER SUPPLY RATINGS**

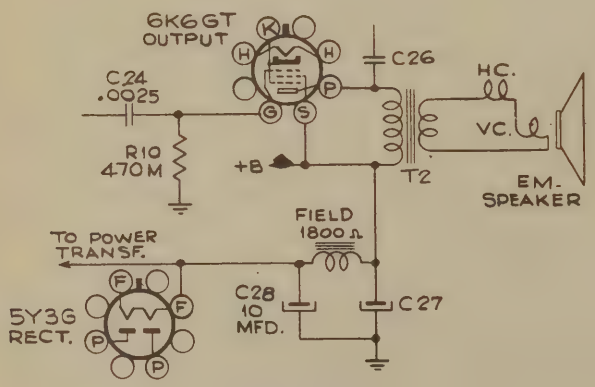
| | |
|---|---|
| 105-125 volts, 50-60 cycles | 50 watts |
| 105-125 volts, 25-60 cycles | 50 watts |
| 105-125, 200-250 volts, 50-60 cycles | 50 watts |

**POWER OUTPUT**

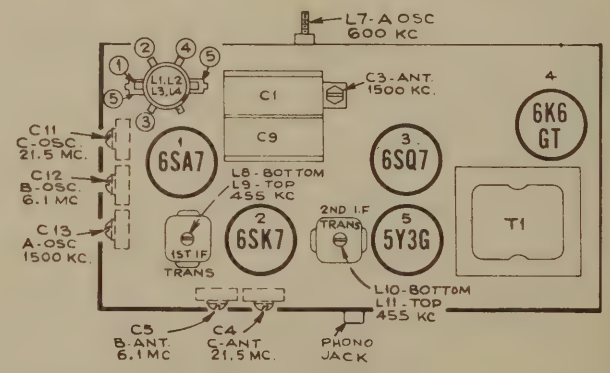
| | |
|---|---|
| Undistorted | 1.4 watts |
| Maximum | 2.3 watts |

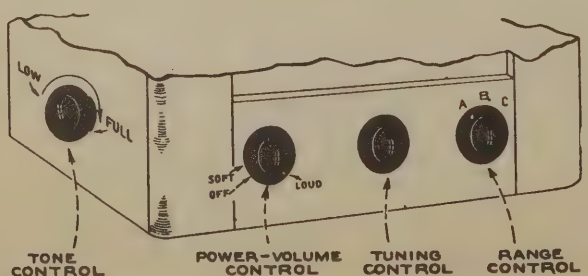
| LOUDSPEAKERS | Q14, Q15 | Q14E, Q15E |
|---|---|---|
| Speaker No. | RL-92A2 | RL-79C1 |
| Type | 6-in. PM | 6-in. EM |
| Field coil resistance | ——— | 1,800 ohms |
| V.C. Impedance at 400 cycles | | 3.4 ohms |

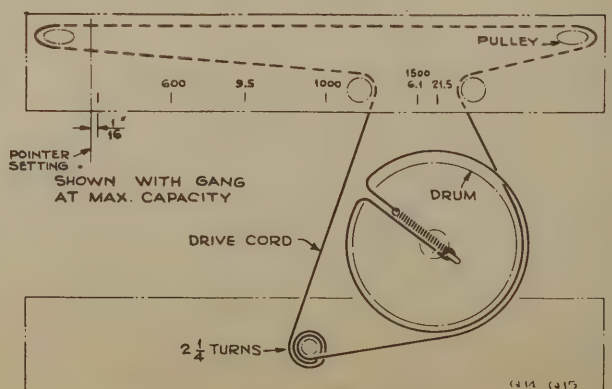


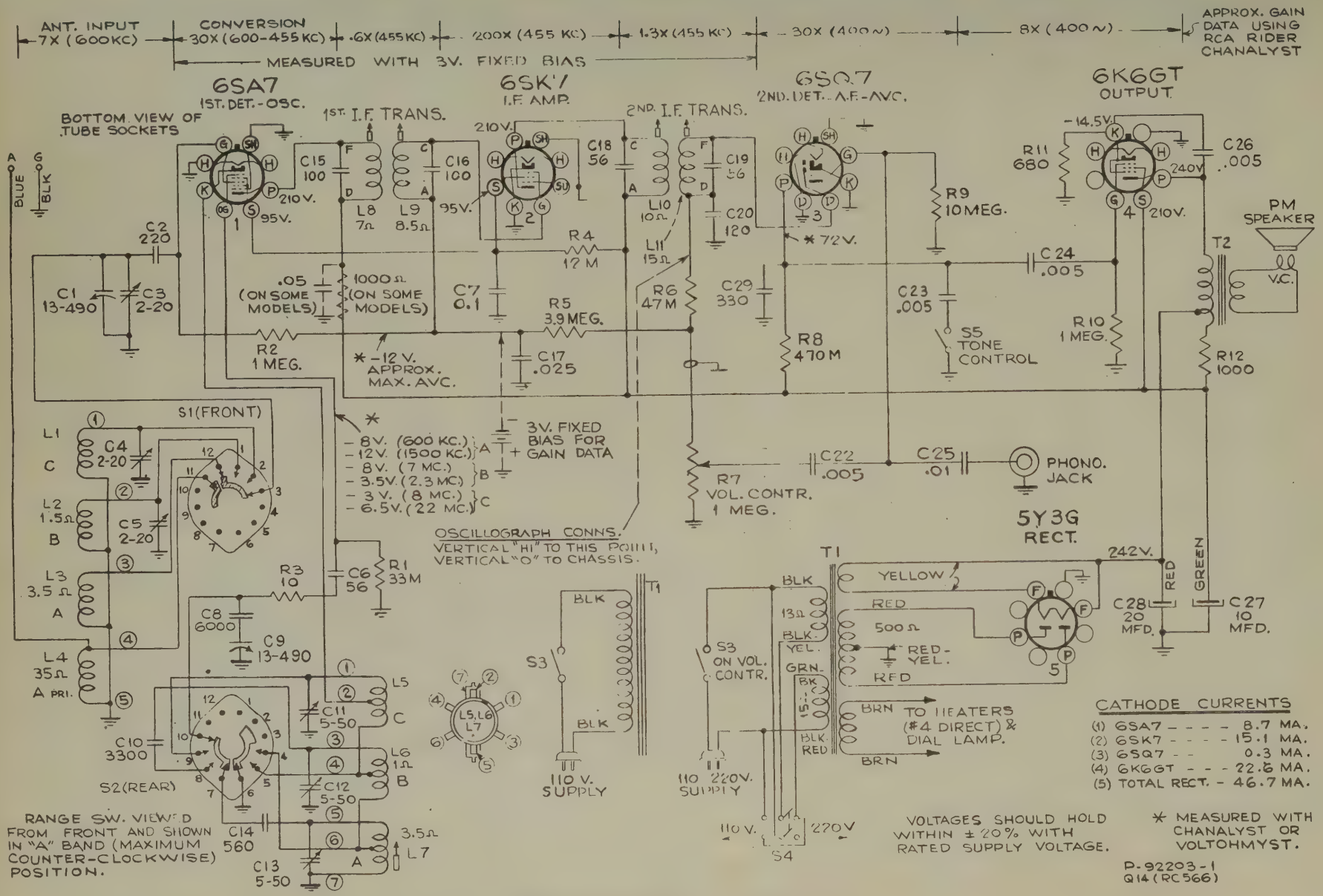




*Q14E and Q15E*




ANT. INPUT 7X (600KC)
CONVERSION 30X (600-455 KC)
.6X (455 KC)
200X (455 KC)
1.3X (455 KC)
30X (400 ~)
8X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
MEASURED WITH 3V. FIXED BIAS
6SA7 1ST. DET.-OSC.
BOTTOM VIEW OF TUBE SOCKETS
1ST. I.F. TRANS.
6SK7 I.F. AMP.
2ND. I.F. TRANS.
6SQ7 2ND. DET.-A.F.-AVC.
6K6GT OUTPUT
5Y3G RECT.
S1 (FRONT)
S2 (REAR)
RANGE SW. VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAXIMUM COUNTER-CLOCKWISE) POSITION.
OSCILLOGRAPH CONNS. VERTICAL "HI" TO THIS POINT, VERTICAL "O" TO CHASSIS.
3V. FIXED BIAS FOR GAIN DATA
- 8V. (600 KC.) } A
- 12V. (1500 KC.) }
- 8V. (7 MC.) } B
- 3.5V. (2.3 MC.) }
- 3 V. (8 MC.) } C
- 6.5V. (22 MC.) }
* -12 V. APPROX. MAX. AVC.
S3 ON VOL. CONTR.
110 V. SUPPLY
110 220V. SUPPLY
S4
S5 TONE CONTROL
PM SPEAKER
V.C.
PHONO. JACK
TO HEATERS (#4 DIRECT) & DIAL LAMP.
CATHODE CURRENTS
(1) 6SA7 - - - - 8.7 MA.
(2) 6SK7 - - - - 15.1 MA.
(3) 6SQ7 - - 0.3 MA.
(4) 6K6GT - - - 22.6 MA.
(5) TOTAL RECT. - 46.7 MA.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH RATED SUPPLY VOLTAGE.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
D-92203-1
Q14 (RC566)

## SCHEMATIC DIAGRAM Q14 AND Q15

*The Speaker Circuit in Q14E and Q15E is Shown on Facing Page.*

Q14, Q15, Q14E, Q15E

## Alignment Procedure

| Steps | Range Switch | Connect high side test osc. to— | Tune test osc. to— | Turn radio dial to | Adjust following for max. peak output |
|---|---|---|---|---|---|
| 1 | "A" | I-F grid in series with .01 mfd. | 455 kc | "A" band quiet point at high freq. end | L10, L11 (2nd I-F trans.) |
| 2 | | 1st det. grid in series with .01 mfd. | | | L9, L8 † (1st I-F trans.) |
| 3 | | Antenna lead in series with 200 mmf. | 1,500 kc (200 m) | 1,500 kc mark (5th mark) | C13, C3 |
| 4 | | | 600 kc (500 m) | 600 kc mark (2nd mark) | L7** Rock gang |
| 5 | | Repeat steps 3 and 4 | | | |
| 6 | "B" | Antenna lead in series with 300 ohms | 6.1 mc | 6.1 mc mark (5th mark) | C12* (osc.) C5 (ant.) |
| 7 | "C" | | 21.5 mc | 21.5 mc mark (6th mark) | C11*, C4 |

* Use minimum capacity peak if two peaks can be obtained.

** Rock gang slightly for peak output.

† Do not readjust L11 or L10 when test oscillator is applied to the 6SA7 Grid.

NOTE: Oscillator tracks above signal on all bands.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be 1/16 inch to the left of first mark on dial backing plate.

**Precautionary Lead Dress RC566 and 566B.—**

1. "B" and "C" band antenna trimmer leads to be dressed away from "B" and "C" band oscillator trimmer leads.
2. Excess power transformer leads to be dressed between power trans. bell and rear apron of chassis.
3. R9 1st Audio grid lead, dressed down to chassis.
4. "B" Band Antenna coil lead to be wired so that it is dressed around "B" band section in a clockwise direction to coil lug in order to obtain proper "B" band tracking.
5. "C" band oscillator cathode lead to be dressed around coil in clockwise direction as shown in sample.
6. Dress tone control capacitor C23 up and away from A.C. switch leads.
7. Dress capacitor C25 from phono. socket to 6SQ7 socket up and away from all parts and leads.
8. Keep grid end of R2 (Pin No. 8 of 6SA7) short as possible.
9. Dress audio coupling C22 from volume control clear of A.C. wiring.
10. Red lead from A.C. switch to power switch to be dressed down against base.
11. Drive front gang mounting screw first.

**Precautionary Lead Dress RC566B.—**

Same as RC566 plus the following:

1. "C" band oscillator cathode lead must be dressed closed to oscillator coil and above all parts as per sample.
2. Blue lead from band switch to oscillator coil must be dressed towards back of oscillator coil.
3. Excess red Electrolytic lead must be dressed near trans.
4. Dress cap. to phono. socket away from 110/220 switch and leads.
5. Dress 6.000 mmf. cap (C8) close to band switch.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | **Q14, Q15—(RC566)** |
| | **Q14E, Q15E—(RC566B)** |
| 35761 | Capacitor—Electrolytic, comprising 1 section of 20 mfd., 350 volts, and 1 section of 10 mfd., 350 volts (Q14 and Q15) |
| 39195 | Capacitor—2 sec., 10 mfd., 450 volts (Q14E and Q15E) |
| 32830 | Capacitor—Mica trimmer, comprising 2 sections of 2-20 mmfd. each |
| 32829 | Capacitor—Mica trimmer, comprising 3 sections of 5-60 mmfd. each |
| 12723 | Capacitor—56 mmfd., moulded |
| 30949 | Capacitor—56 mmfd., unmoulded |
| 30904 | Capacitor—100 mmfd. |
| 12724 | Capacitor—120 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 12952 | Capacitor—330 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 31403 | Capacitor—3,300 mmfd. |
| 31405 | Capacitor—6,000 mmfd. |
| 34459 | Capacitor—.0025 mfd. (Q14E and Q15E) |
| 4838 | Capacitor—.005 mfd., 1,000 volts |
| 33584 | Capacitor—.005 mfd., 1,200 volts |
| 4858 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 32821 | Coil—Antenna coil—"A," "B," and "C" bands |
| 38292 | Coil—Oscillator coil—"A," "B," and "C" bands |
| 38287 | Condenser—Variable tuning condenser |
| 33630 | Control—Tone control |
| 38406 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 53 in. overall lgth.) |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 36237 | Drum—Tuning condenser drive drum |
| 38331 | Indicator—Station selector indicator |
| 38332 | Plate—Dial back plate complete with pulleys—less dial |
| 5119 | Plug—3-contact female for speaker cable (Q14E and Q15E) |
| 36230 | Pulley—Drive cord pulley |
| 13988 | Resistor—10 ohms, ½ watt |
| 32686 | Resistor—680 ohms, 1 watt |
| 30152 | Resistor—1,000 ohms, 1 watt (Q14 and Q15) |
| 43765 | Resistor—12,000 ohms, 2 watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 32809 | Resistor—3.9 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 38333 | Shaft—Tuning knob shaft |
| 35772 | Shield—Bottom end shield for power transformer (Q14 and Q15) |
| 35709 | Shield—Top end shield for power transformer (Q14 and Q15) |
| 36932 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 38330 | Switch—Range switch |
| 32827 | Switch—Voltage change switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 35758 | Transformer—Power transformer—105-125 volts, 25 cycle—less end shields (Q14 and Q15) |
| 35757 | Transformer—Power transformer—105-125 volts 50-60 cycle—less end shields (Q14 and Q15) |
| 35759 | Transformer—Power transformer—110-220 volts, 50-60 cycle (Q14 and Q15) |
| 35588 | Power Transformer—105-120 volts, 25 cycle (Q14E and Q15E) |
| 32852 | Power Transformer—110-220 volts, 50-60 cycle (Q14E and Q15E) |
| 32911 | Power Transformer—105-120 volts, 50-60 cycle (Q14E and Q15E) |
| 33726 | Washer—"C" washer for tuning shaft |
| | **Q14, Q15 SPEAKER ASSEMBLIES—P. M. (RL-92A2)** |
| 31825 | Cap—Dust cap |
| 38392 | Cone—Cone complete with voice coil |
| 31567 | Plug—3-prong male plug for speaker |
| 37984 | Transformer—Output transformer |
| | **Q14E AND Q15E SPEAKER ASSEMBLIES (RL-79C1)** |
| 31825 | Cap—Dust cap |
| 32903 | Coil—Field coil—1,800 ohms |
| 38392 | Cone—Cone complete with voice coil |
| 5118 | Plug—3 prong male plug for speaker |
| 32905 | Transformer—Output transformer |
| | Note: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required. |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38335 | Clamp—Dial clamp |
| 36103 | Decalcomania—"Off-Volume" decal |
| 35480 | Decalcomania—Range switch decal |
| 38336 | Dial—Glass dial scale |
| 35650 | Knob—Tone control knob |
| 37256 | Knob—Tuning knob |
| 38334 | Knob—Volume control or range switch knob |
| 11891 | Lamp—Dial lamp |
| 14270 | Spring—Retaining spring for knob, No. 35650 |
| 30900 | Spring—Retaining spring for knobs, No. 38334 and No. 37256 |

# Chassis No. RC-527, 527-A & 527-C MODEL 15BP SERIES

## Five-Tube, Single-Band, Battery or House Current Superheterodyne Receivers

### Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-1A7-GT ..... 1st.-Det.—Osc.
(2) RCA-1N5-GT ..... I-F Amplifier
(3) RCA-1H5-GT ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-3Q5-GT ..... Output
(5) RCA-35Z5-GT ..... Rectifier

Line Current Supply

110 to 125 volts, AC 50 or 60 cycles, or DC

Batteries Required

"A" one 1.5 volt dry plug-in type "A," (Eveready No. 743 or equivalent)
"B" two 45 volt dry plug-in type "B," (Eveready No. 482 or equivalent)

Current Consumption

"A" 0.25 amperes
"B" 11.5 milliamperes ..... Battery Operation

Power Output

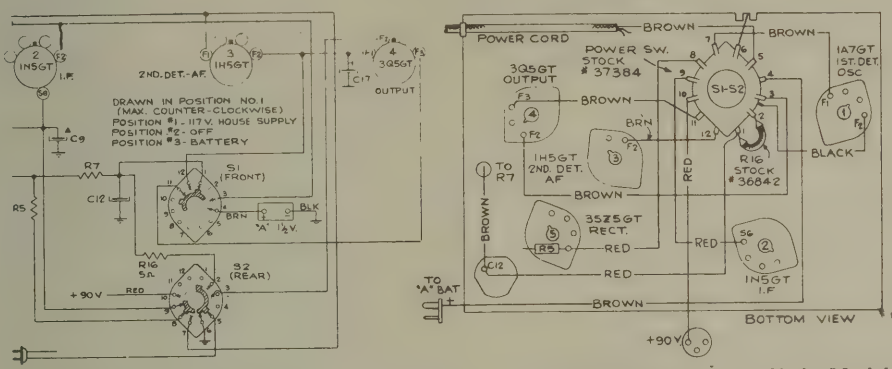
Undistorted ..... .15 watt
Maximum ..... .25 watt

Loudspeaker

Type ..... 5-inch permanent-magnet dynamic
Voice-coil Impedance ..... 3.4 ohms at 400 cycles
Identification Number ..... RL-85-A1
15BP-7 only ..... RL-81-B1

Power line consumption, 117 volts .. 35 watts
Total rectified "B" current, 117 volts 60 cycles .. ... 56 mils.

| Model | Type Cabinet | | |
|---|---|---|---|
| Chassis RC-527 | | Chassis RC-527A | |
| 15BP-1 | Plastic | 15BP-3 | Gray Fabric |
| 15BP-2 | Brown Fabric | 15BP-5 | Blue Leatherette |
| 15BP-4 | Brown Leatherette | | |
| 15BP-6 | Wood .... | | |
| 15BP7 | RC527C | Tan Leatherette | |




*Schematic and Wiring Diagram for Connecting No. 37383 Power Switch Kit in Model 15BP Series*

### Replacement Power Switch Kit No. 37383:

Filament burn-outs may be caused by excessive voltage surges occurring when switching from "POWER LINE" to "BATTERY" or vice versa. Whenever servicing receivers for this reason, the power switch should be replaced and wired as shown, using Stock No. 37383 power switch kit.

Note the addition of a 5-ohm resistor, and the necessity for installing a new indicator, both of which are included in the replacement power switch kit, Stock No. 37383. The new indicator is arranged "BATTERY-OFF-POWER LINE," necessitating that the switch pass through "OFF" in going from line to battery, thereby discharging all filter capacitors.

The Stock No. 37383 kit contains one each of:

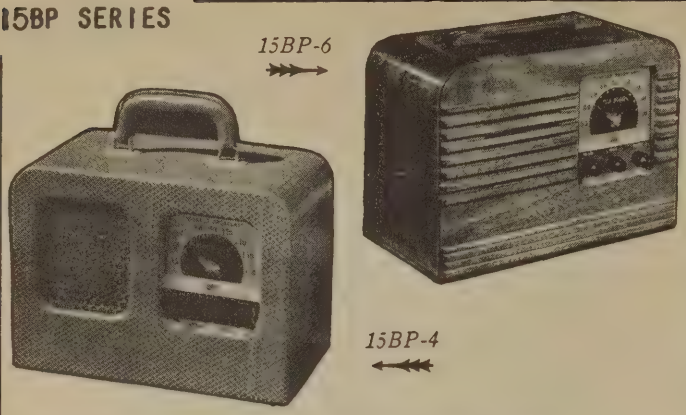
Stock No.
37384 Power switch only
37385 Indicator only ("BATT-OFF POWER LINE")
36842 5-ohm resistor only

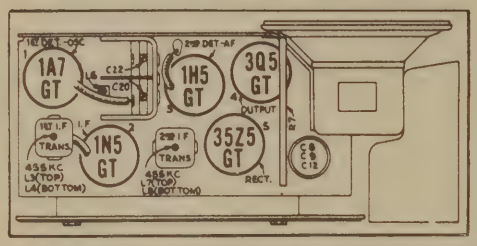
**This change is incorporated in Second Production Models**

| Stock No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | **RC 527 (15BP1, 15BP2, 15BP4, 15BP6)<br>RC 527A (15BP3, 15BP5)<br>RC 527C (15BP7)** |
| 36176 | Capacitor—33 mmfd., silver mica |
| 36175 | Capacitor—56 mmfd., silver mica |
| 12720 | Capacitor—100 mmfd. |
| 13894 | Capacitor—390 mmfd. |
| 36163 | Capacitor—.001 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 34965 | Capacitor—Electrolytic 20 mfd., 25 volts |
| 34472 | Capacitor—Electrolytic comprising two sections of 20 mfd., 150 volts, and one section of 200 mfd., 25 volts |
| 36134 | Case—Power cord case |
| 36123 | Coil—Oscillator coil |
| 36120 | Condenser—Variable tuning condenser |
| 36125 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 13-in. overall) |
| 36128 | Dial—Dial scale — Models 15BP1, 15BP2, 15BP4, 15BP6. 15BP-7 |
| 36251 | Dial—Dial scale—Models 15BP3 and 15BP5 |
| 36133 | Indicator—Station selector indicator |
| 36132 | Loop—Antenna loop |
| 36127 | Plate—Dial plate—less dial |
| 32208 | Plug—2-prong male plug for "A" battery cable |
| 32641 | Plug—3-prong male plug for "B" battery cable |
| 36129 | Resistor—Voltage divider—2,800 ohms, 7 watts |
| 30538 | Resistor—330 ohms, ½ watt |
| 14076 | Resistor—820 ohms, ½ watt |
| 30730 | Resistor—2,700 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 36130 | Shaft—Tuning shaft |

| Stock No. | DESCRIPTION |
|---|---|
| 32299 | Socket—Tube socket |
| 36131 | Spring—Drive cord spring |
| 36121 | Transformer—First I-F transformer |
| 36122 | Transformer—Second I-F transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| 37385 | Indicator—Power switch indicator plate (Power Line—Off—Battery) |
| 36842 | Resistor—5 ohm resistor (1 watt) (Flexible) |
| 37681 | Resistor—Resistance power cord, 545 ohms |
| 37384 | Switch—Power switch |
| | **SPEAKER ASSEMBLIES (RL-85A1) (RL-81-B1)** |
| 32907 | Cap—Dust cap |
| 36465 | Cone—Cone complete with voice coil. (RL-85A1) |
| 36098 | Transformer—Output transformer |
| 35570 | Cone—Cone complete with voice coil. (RL-81-B1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36150 | Back—Back cover—Model 15BP1 |
| 36152 | Crystal—Dial scale crystal—Models 15BP2, 15BP3, 15BP4, 15BP5, 15BP6 |
| 36151 | Crystal—Dial scale crystal—Model 15BP1 |
| 36153 | Fastener—One set of 4 push-on fasteners for back cover—Model 15BP1 |
| 35678 | Fastener—Push-on fastener for crystal—Model 15BP1 |
| 36222 | Fastener—Snap fastener for power cord door |
| 36225 | Handle—Carrying handle—Model 15BP6 |
| 36221 | Handle—Carrying handle—Models 15BP2 and 15BP4 |
| 36224 | Handle—Carrying handle—Model 15BP5 |
| 36223 | Handle—Carrying handle—Model 15BP3 |
| 36252 | Knob—Black volume control power switch or tuning knob—Models 15BP3 and 15BP5 |
| 35121 | Knob—Brown volume control, power switch, or tuning knob—Models 15BP1, 15BP2, 15BP4, 15BP6 |
| 36154 | Spacers—One set of rubber spacers for control shaft |
| 35392 | Decalcomania — Trade-mark decal |
| 37368 | Handle—Carrying handle |

## Alignment Procedure




**Precautionary Lead Dress.—**

1. Lead from I-F tube grid and from the loop to variable capacitor should not be disturbed after receiver has been aligned.
2. Grid lead to the 1N5-GT tube should be kept away from leads to filament resistors.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1N5GT I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | L8, L7 (2nd transformer) |
| 2 | 1A7GT 1st-Det. grid cap, in series with .01 mfd. | | | L4, L3 (1st I-F transformer) |
| 3 | radiated signal 1,720 kc | | signal frequency | C22 (Osc. Trimmer) |
| 4 | radiated signal 1,400 kc | | | C20 (Ant. Trimmer) |
| 5 | radiated signal near 600 kc | | | L6 (Rock in) |
| 6 | Repeat steps 3, 4 and 5 until aligned. | | | |

### Fidelity Change:

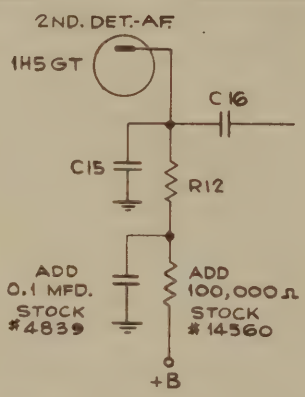
Should accentuation of the higher audio frequency register be desired, capacitor C-15, connected across the 1st A.F. output, may be decreased from 390 mmfd. to 100 mmfd. Some production instruments will have this change already applied; therefore, circuit diagrams should be revised accordingly.

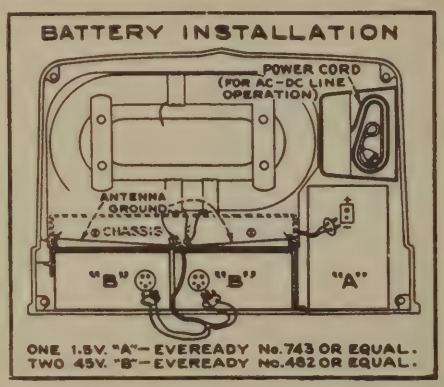
### Hum:

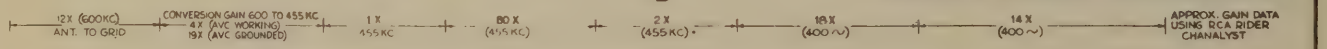
Occasional cases of hum on Model 15BP instruments may often be reduced by application of the following:

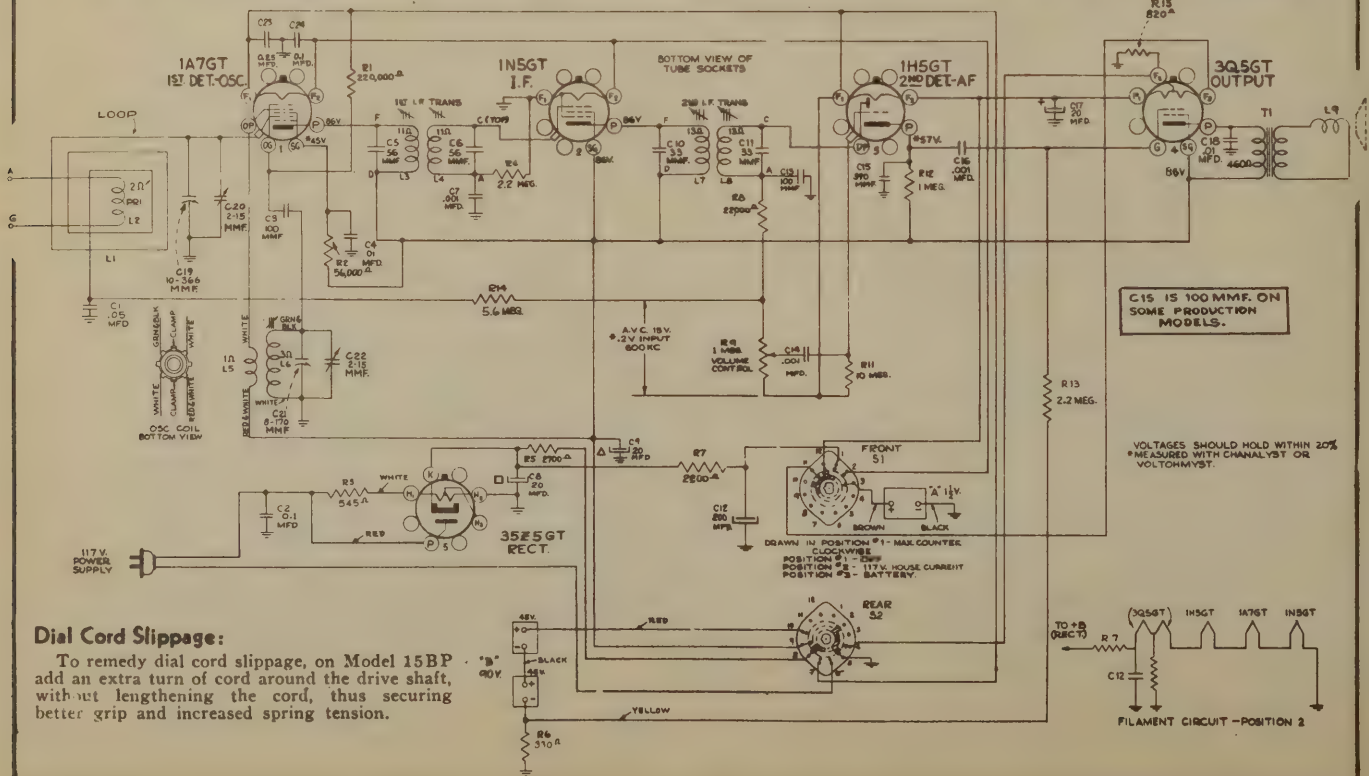
(a) Shield the 1H5GT 2nd det. A.F. tube by means of a tube shield securely grounded.

(b) Insert a filter network in the 1st audio plate circuit as shown in the accompanying diagram.





1A7GT 1ST DET-OSC.
1N5GT I.F.
1H5GT 2ND DET-AF
3Q5GT OUTPUT
35Z5GT RECT.
BOTTOM VIEW OF TUBE SOCKETS
LOOP
OSC COIL BOTTOM VIEW
117 V. POWER SUPPLY
A.V.C. 18 V. -.2 V. INPUT 600 KC
VOLUME CONTROL
FRONT 51
REAR 52
DRAWN IN POSITION #1 - MAX. COUNTER CLOCKWISE
POSITION #1 - OFF
POSITION #2 - 117 V. HOUSE CURRENT
POSITION #3 - BATTERY.
C15 IS 100 MMF. ON SOME PRODUCTION MODELS.
VOLTAGES SHOULD HOLD WITHIN 20% *MEASURED WITH CHANALYST OR VOLTOHMYST.
TO +B (RECT.)
FILAMENT CIRCUIT - POSITION 2

### Dial Cord Slippage:

To remedy dial cord slippage, on Model 15BP add an extra turn of cord around the drive shaft, without lengthening the cord, thus securing better grip and increased spring tension.

# MODEL 15BT

Chassis No. RC-526

## Five-Tube, Two-Band, Battery-Operated, Superheterodyne Receiver

RCA Victor 15BT.

## Electrical and Mechanical Specifications

FREQUENCY RANGE

| | |
|---|---|
| Broadcast | 535-1,712 kc |
| Short Wave | 5.9-18.3 mc |
| Intermediate Frequency | 455 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-1N5GT | R-F Amplifier |
| (2) RCA-1A7GT | 1st Detector-Oscillator |
| (3) RCA-1N5GT | I-F Amplifier |
| (4) RCA-1H5GT | 2nd Detector, AVC, and A-F |
| (5) RCA-3Q5GT | Power Output |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 0.14 watts |
| Maximum | 0.25 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 5-inch permanent-magnet dynamic |
| Voice Coil Impedance | 3.4 ohms at 400 cycles |
| Indentification Number | RL-93-1 |

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 9¾ | 18 | 10 7/16 |

| | |
|---|---|
| Weight, Net | 15 lbs. |
| Shipping | 18 lbs. |
| Tuning Drive Ratio | 22 : 1 |

CURRENT CONSUMPTION

"A", 0.3 ampere—"B", 13 milliamperes
(In "Battery Saver" position, the "B" drain is reduced approximately 40%)

BATTERIES REQUIRED

"A"—"B" Pack (1.5 volt "A," 90 volt "B.")

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-526)** |
| 36083 | Can—Shield can for I-F transformer, Stock No. 36082 |
| 35097 | Can—Shield can for I-F transformer, Stock No. 36189 |
| 33817 | Capacitor—Mica trimmer—1 section of 2-20 mmfd. |
| 36192 | Capacitor—Mica trimmer—1 section of 3-30 mmfd. |
| 13002 | Capacitor—12 mmfd. |
| 13545 | Capacitor—39 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 32363 | Capacitor—470 mmfd. |
| 14498 | Capacitor—680 mmfd. |
| 36247 | Capacitor—3,900 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 32548 | Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 12 mfd. |
| 36190 | Coil—Antenna coil |
| 36092 | Coil—Oscillator coil |
| 33787 | Coil—Oscillator coil—"C" band |
| 36191 | Coil—R.F. coil |
| 36186 | Condenser—Variable tuning condenser |
| 36080 | Control—Volume control and power switch |
| 36093 | Core—Adjusting core and stud for oscillator coil |
| 36193 | Indicator—Station selector indicator |
| 34256 | Lamp—Blinker lamp |
| 36197 | Plate—Dial plate complete with drive cord pulleys less dial scale |
| 30550 | Plug—4-prong male plug for battery cable |
| 32289 | Pulley—Drive cord pulley and shoulder rivet |
| 14561 | Resistor—220 ohms, ½ watt |
| 12261 | Resistor—390 ohms, ½ watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 30146 | Resistor—4,700 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 5131 | Resistor—2.2 meg., 1/10 watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13167 | Resistor—3.9 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 36195 | Shaft—Tuning shaft |
| 36657 | Socket—Phono. input cable socket |
| 31319 | Socket—Tube socket |
| 33175 | Spring—Drive cord spring |
| 35098 | Spring—Spring used to hold I-F transformer in can |
| 36188 | Switch—Range switch |
| 36081 | Switch—Tone and battery switch |
| 36196 | Support—Tuning shaft support |
| 36082 | Transformer—First I-F transformer—less shield can |
| 36189 | Transformer—Second I-F transformer—less shield can |
| 36194 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (RL-93-1)** |
| 32907 | Cap—Dust cap |
| 36426 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36198 | Decalcomania—Control panel decal |
| 36220 | Dial—Glass dial scale |
| 35915 | Escutcheon—Dial scale escutcheon—less dial |
| 36297 | Knob—Tone and battery or range switch knob |
| 36298 | Knob—Volume and power switch or tuning knob |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 36297 and 36298 |
| MI-8128 | Adaptor—Cable for 3 separate batteries |

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagrams.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or Volt Ohmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment.

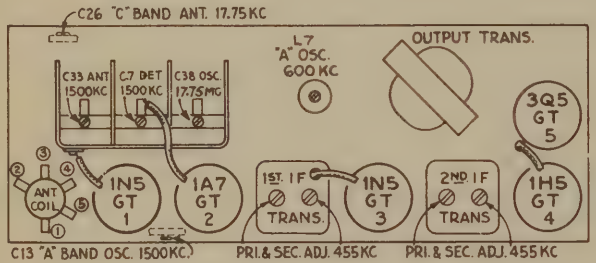
1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

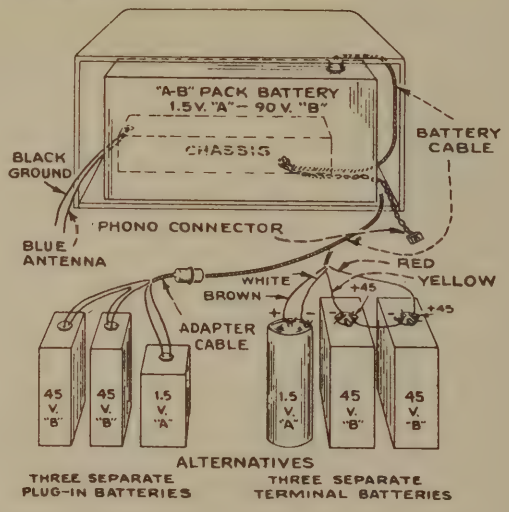
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

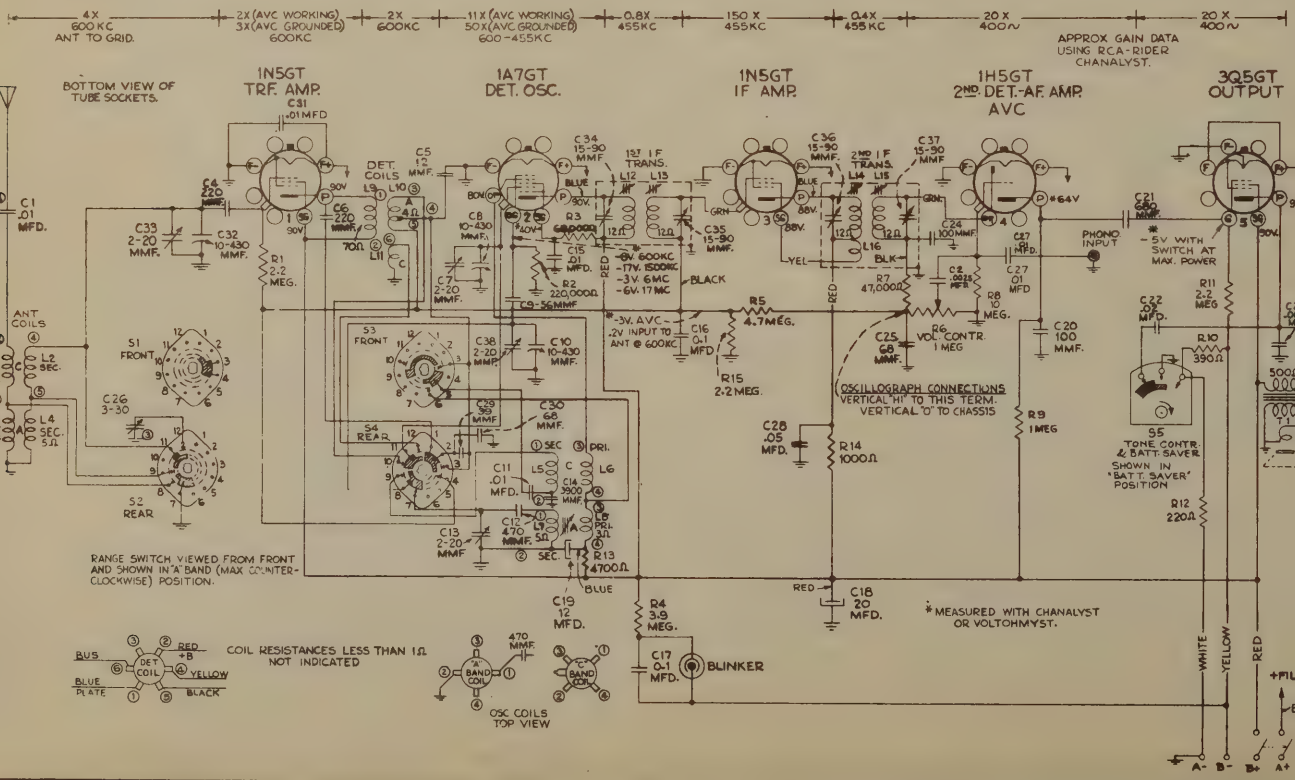
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 1N5GT I-F grid cap in series with 0.1 mfd. | 455 kc | "A" band Quiet point between 550-750 kc | C37, C36 2nd I-F transformer |
| No. 2 | 1A7GT 1st-Det. grid cap, in series with 0.1 mfd. | | | C35, C34 1st I-F transformer |
| No. 3 | Antenna lead, in series with 200 mmfd. | 17.75 mc | "C" band 17.75 mc | C38* Osc. trimmer |
| No. 4 | | 1,500 kc | "A" band 1,500 kc | C13, C7, C33 Osc. R.F. Ant. Trimmers |
| No. 5 | | 600 kc | "A" band 600 kc | L7 osc. (Rock in) |
| No. 6 | | Repeat steps 4 and 5 | | |
| No. 7 | | 17.75 mc | "C" band 17.75 mc | C26 Ant. trimmer |

* Use minimum capacity peak.



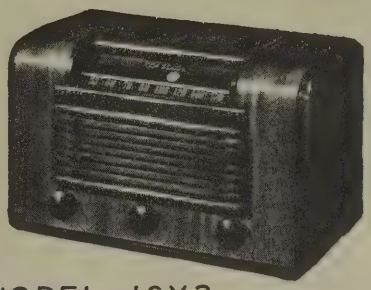





4X 600 KC ANT TO GRID.
2X (AVC WORKING) 3X (AVC GROUNDED) 600KC
2X 600KC
11X (AVC WORKING) 50X (AVC GROUNDED) 600-455KC
0.8X 455KC
150 X 455KC
0.4X 455KC
20 X 400∩
20 X 400∩
APPROX. GAIN DATA USING RCA-RIDER CHANALYST.
BOTTOM VIEW OF TUBE SOCKETS.
1N5GT TRF. AMP.
1A7GT DET. OSC.
1N5GT IF AMP.
1H5GT 2ND DET.-A.F. AMP. AVC
3Q5GT OUTPUT
ANT COILS
S1 FRONT
S2 REAR
S3 FRONT
S4 REAR
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAX COUNTER-CLOCKWISE) POSITION.
OSCILLOGRAPH CONNECTIONS VERTICAL "H" TO THIS TERM. VERTICAL "O" TO CHASSIS
S5 TONE CONTR. & BATT. SAVER SHOWN IN "BATT. SAVER" POSITION
COIL RESISTANCES LESS THAN 1Ω NOT INDICATED
OSC. COILS TOP VIEW
* MEASURED WITH CHANALYST OR VOLTOHMYST.
BLINKER
PHONO INPUT
* -5V WITH SWITCH AT MAX. POWER
+FIL.
BROWN 1.5V.
S6

# MODELS 15X, 16X-1, 16X-2 16X-3 and 36X

Chassis Nos. RC-462, RC-462A RC-462B RC-462-A

## Six-Tube, Single-Band, AC-DC, Superheterodyne Receivers



MODEL 16X3

MODEL 36X

MODEL 15X WALNUT
MODEL 16X1 WALNUT
MODEL 16X2 IVORY

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 535-1,720 kc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SK7 ..... R-F Amplifier
(2) RCA-12SA7 ..... 1st Det.—Osc.
(3) RCA-12SK7 ..... I-F Amplifier
(4) RCA-12SQ7 ..... 2nd Det., A.V.C., and A-F Amplifier
(5) RCA-35L6-GT ..... Power Output
(6) RCA-35Z5-GT ..... Rectifier

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp.

POWER OUTPUT

Undistorted ..... 0.9 watts
Maximum ..... 1.4 watts

POWER SUPPLY RATING

105-125 volts, AC, 50 or 60 cycles, or DC ..... 80 watts

| Model | Height | Width | Depth | Weight (net) | Type Cabinet |
|---|---|---|---|---|---|
| **Chassis RC-462** | | | | | |
| 15X | 7¾ in. | 12 in. | 7 in. | 7⅛ lbs. | Mahogany Plastic |
| **Chassis RC-462A** | | | | | |
| 16X-1 | 7¾ in. | 12 in. | 7 in. | 7⅛ lbs. | Mahogany Plastic |
| 16X-2 | 7¾ in. | 12 in. | 7 in. | 7⅛ lbs. | Ivory Plastic |
| **Chassis RC-462B** | | | | | |
| 16X-3 | 8 7/16 in | 13⅞ in | 7⅛ in. | 9 lbs. | Wood |

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions 36X | 8¾-in. | 14¾-in. | 7⅛-in. |

LOUDSPEAKER (RL-81A-5)

Type ..... 5-inch permanent-magnet dynamic
V.C. Impedance ..... 4 ohms at 400 cycles

LOUDSPEAKER (RL-86-B1)

Type ..... 5-inch Electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

Tuning Drive Ratio ..... 16-1

## Alignment Procedure

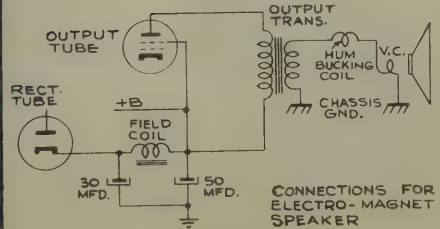
**Output Meter Alignment.** — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.** — For all alignment operations, keep the output as low as possible to avoid a-v-c action.

**Precautionary Lead Dress:**

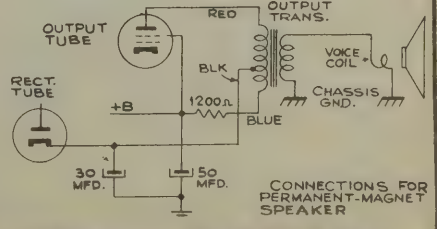
1. .01 mfd. capacitor from output plate to cathode to be dressed as far as possible away from .015 mfd. 1st audio grid condenser and volume control terminals to eliminate audio howl.
2. Filament lead to pin No. 7 on 35L6-GT socket to be dressed away from 1st audio grid.
3. Dress B+ lead on 12SK7 I.F. socket across bottom of socket between grid and plate contacts to aid reduction of grid plate capacitance.
4. Dress excess lead lengths of I.F. transformer, grid and plate leads into cans to aid shielding.
5. Dress filament leads of 35L6-GT around 12SQ7 socket and into chassis corner to reduce hum.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid, in series with 0.1 mfd. | 455 kc | Quiet Point at 1,700 kc end of dial | C23, C22 2nd I-F transformer |
| 2 | 12SA7 1st det. grid, in series with 0.1 mfd. | | | C21, C20 1st I-F transformer |
| 3 | 12SK7 R-F grid, in series with 0.1 mfd. | 1,720 kc | 1,720 kc | C18 (osc.) |
| 4 | Radiation Loop | 1,300 kc | Signal frequency | C16 (ant.) |
| 5 | Repeat steps 3 and 4 | | | |



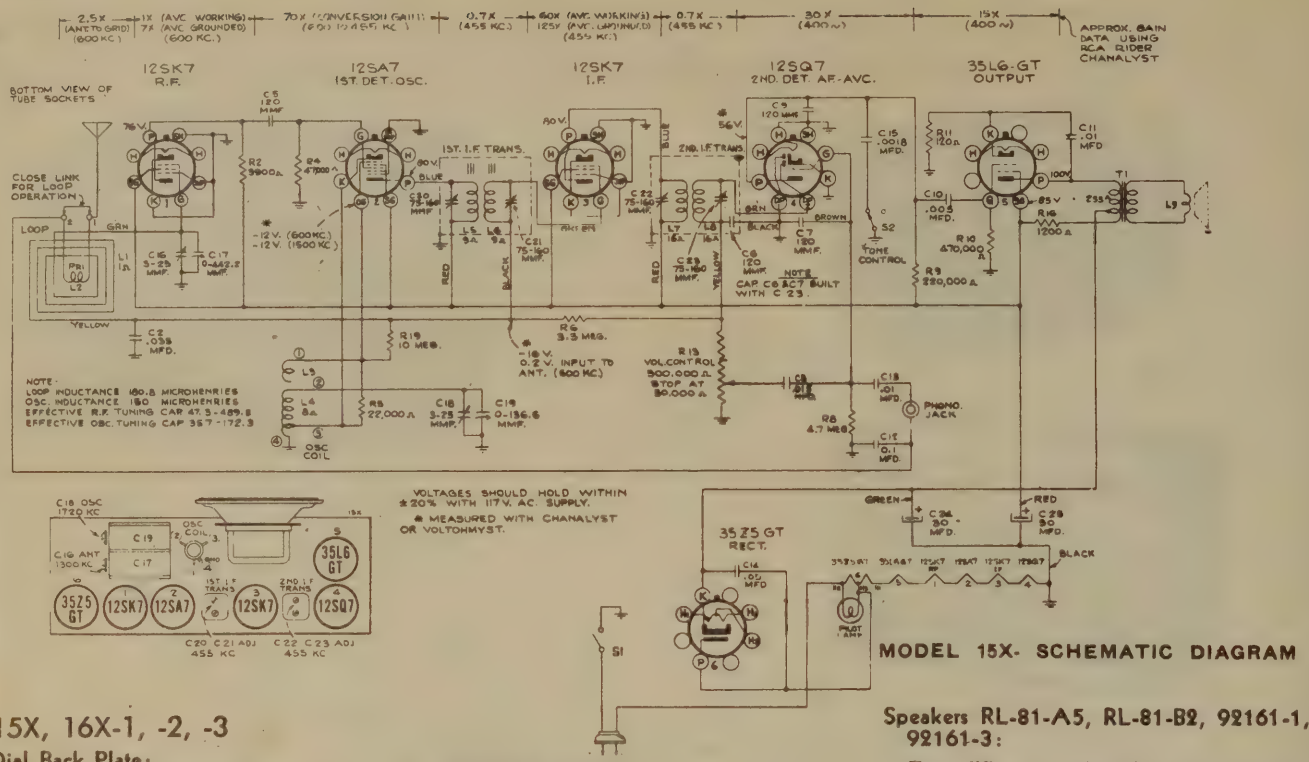

CONNECTIONS FOR ELECTRO-MAGNET SPEAKER

WHEN ORDERING REPLACEMENT PARTS FOR SPEAKERS, NOTE THE IDENTIFICATION NUMBER STAMPED ON THE SPEAKER FRAME. IF THE NUMBER STAMPED ON THE SPEAKER DOES NOT APPEAR IN THE FOLLOWING LIST, ORDER THE REQUIRED PART BY DESCRIPTION, AND SPECIFY THE IDENTIFYING NUMBER STAMPED ON THE SPEAKER AND THE RECEIVER MODEL NUMBER.




CONNECTIONS FOR PERMANENT-MAGNET SPEAKER

# 15X, 16X1, 16X2, 16X3, 36X




**MODEL 15X- SCHEMATIC DIAGRAM**

## 15X, 16X-1, -2, -3

### Dial Back Plate:

In some production, the dial back plate and pulley assembly is changed from "garnet maroon," Stock No. 36229, to "Black," Stock No. 38767.

### Capacitor Changes:

In 2nd Production, the following capacitors are changed:

C5 from 120 to 150 mmfd., Stock No. 12725
C8 from .015 to .02 mfd., Stock No. 36248
C9 from 120 to 300 mmfd.

C9 is built in with C10 (.005 mfd.) and the stock number of the dual unit is 37359.

### Substitute Speaker:

On 2nd Production of 15X, 16X-1, 16X-2, RL-86-B1 "EM" speaker is used in place of the original RL-81-A5 "PM" speaker.

Replacement parts for the RL-86-B1 speaker are listed below. The alternate circuit arrangements are shown in accompanying diagrams.

RL-86-B1

| Stock No. | Description |
|---|---|
| 32907 | Cap—Dust cap..... |
| 39448 | Coil—Field coil, 350 ohms..... |
| 39447 | Cone—Cone and voice coil..... |

The output transformer for this speaker is Stock No. 38994.

### Speakers RL-81-A5, RL-81-B2, 92161-1, 92161-3:

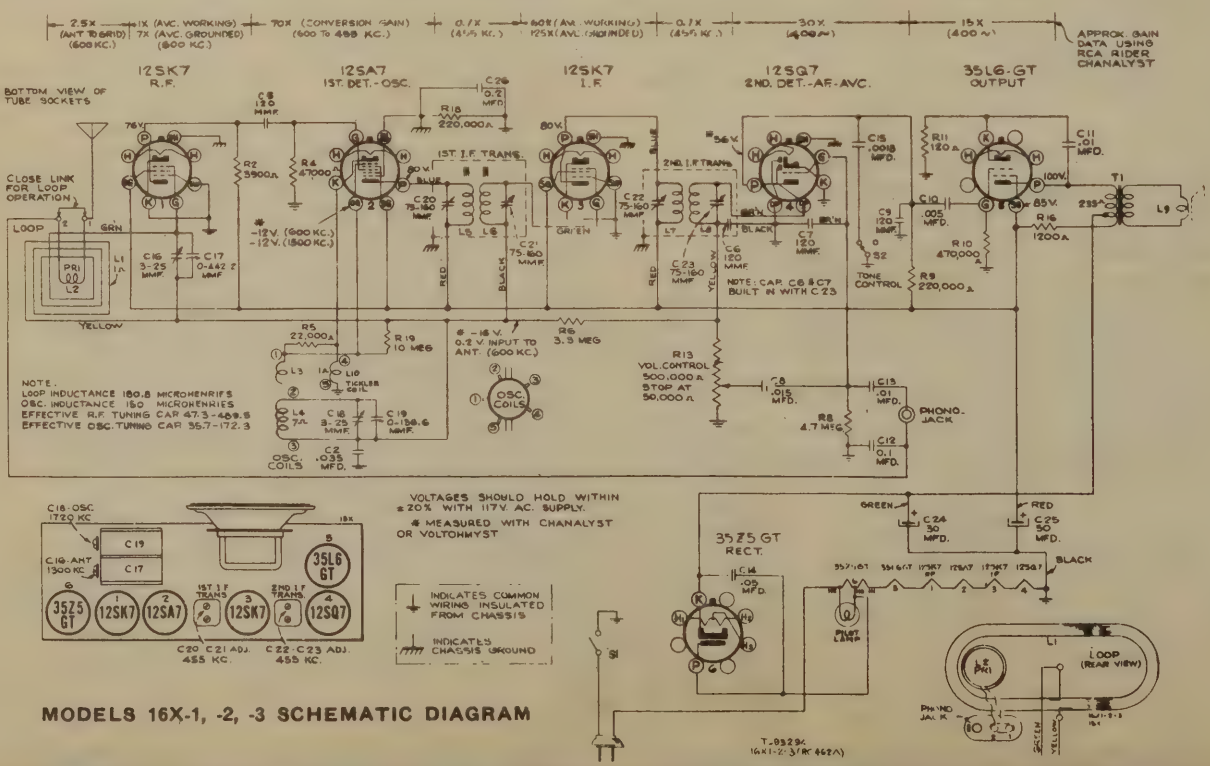
Four different speakers have been used on these models. The replacement parts are listed below:

SPEAKERS STAMPED "RL-81-A5" or "RL-81-B2"

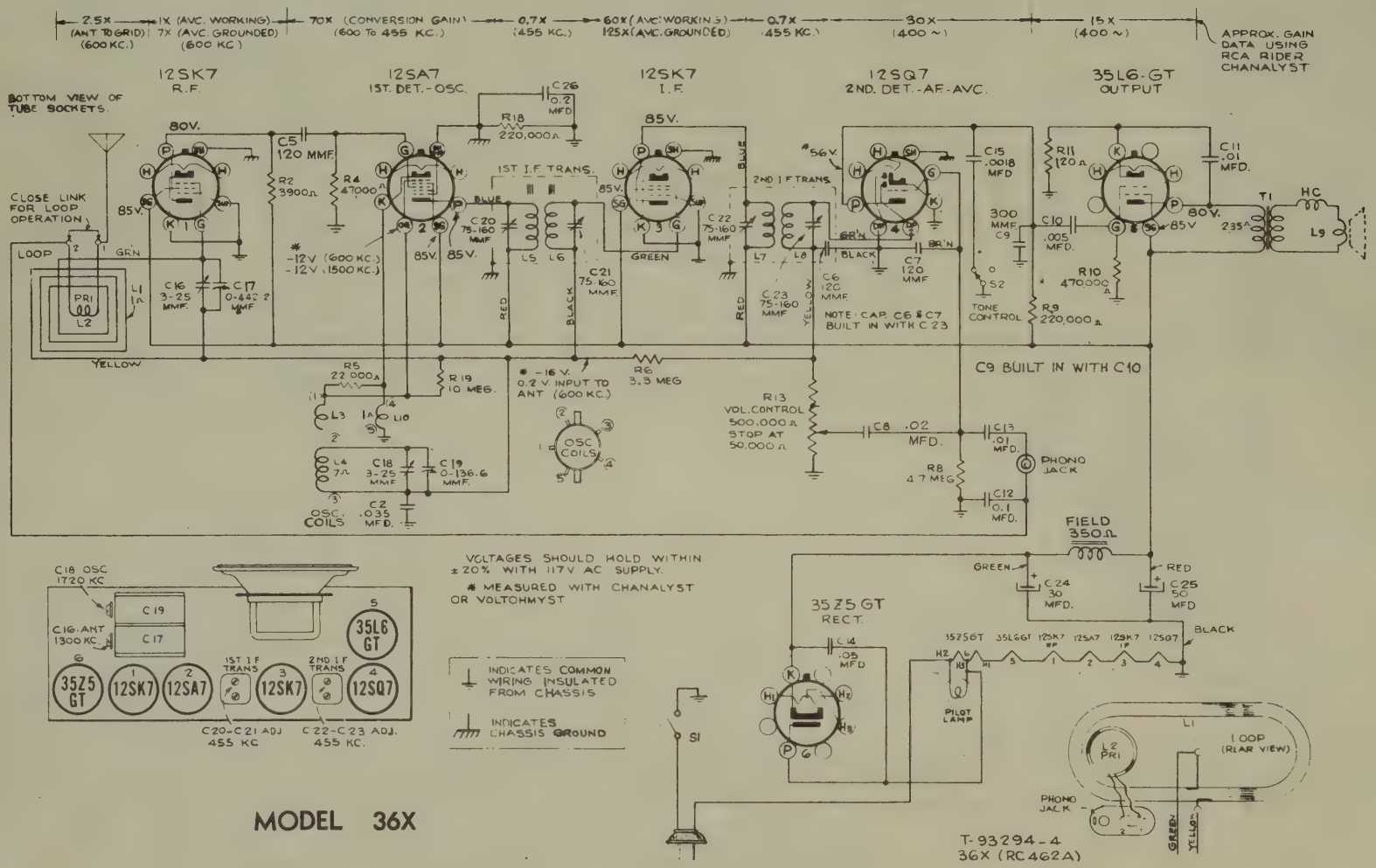
| Stock No. | |
|---|---|
| 32907 | Cap—Dust cap..... |
| 35570 | Cone—Cone complete with voice coil..... |

SPEAKERS STAMPED "92161-1" or "92161-3"

| | |
|---|---|
| 38352 | Cone—Cone complete with voice coil..... |




**MODELS 16X-1, -2, -3 SCHEMATIC DIAGRAM**



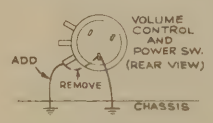

## MODEL 36X

EITHER EM" OR "PM" SPEAKERS MAY BE USED IN MODELS 15X, 16X1, -2, -3.
"EM" SPEAKER CONNECTIONS AS SHOWN IN SCHEMATIC OF MODEL 36X.

## 15X, 16X SERIES

**Residual Hum:**

In some instruments the ground return of the volume control is made to a lug on the power switch, and has a mutual path thru several inches of lead with the power circuit. This introduces a certain amount of hum into the first audio stage input. Hum due to this cause can be eliminated by removing the present grounding lead of the volume control from the power switch, and connecting it directly to the chassis.




*Simple Wiring Change to Reduce Hum in Models 15X and 16X.*

## SUBSTITUTE SPEAKERS 15X, 16X-1, 16X-2

| NUMBER STAMPED ON SPEAKER | CONE AND VOICE COIL STOCK No. | FIELD COIL STOCK No. | Output Trans. Stock No. |
|---|---|---|---|
| RL-86-A3 | 35570 | 39543 | 38994 |
| RL-86-B1 | 39447 | 39448 | 38994 |
| RL-86-B4 | 39447 | 39448 | 38994 |
| 92161-3 | 38352 | PM | 36800 |
| 92161-4 | 39535 | PM | 36800 |
| 92161-5 | 38352 | PM | 36800 |
| 92322-2 | 39536 | PM | 36800 |
| 92374-1 | 39537 | PM | 36800 |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES**<br>**Model 15X (RC-462)**<br>**Model 16X1 (RC-462A)**<br>**Model 16X2 (RC-462A)**<br>**Model 16X3 (RC-462B)** |
| 36239 | Board—Terminal and receptacle board |
| 36238 | Bracket—Dial lamp bracket |
| 12724 | Capacitor—120 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd.—Models 16X1, 16X2, 16X3 |
| 36301 | Capacitor—Electrolytic comprising 1 section of 30 mfd. and 1 section of 50 mfd., 150 volts each |
| 35096 | Coil—Loop loading coil |
| 36234 | Coil—Oscillator coil—Model 15X |
| 36801 | Coil—Oscillator coil—Models 16X1, 16X2, 16X3 |
| 36226 | Condenser—Variable tuning condenser |
| 36242 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord—(Approx. 49 in. overall.) |
| 36237 | Drum—Drive drum |
| 36236 | Indicator—Station selector indicator |
| 36231 | Loop—Antenna loop complete |
| 36229 | Plate—Dial back plate and pulley assembly complete |
| 36230 | Pulley—Drive cord pulley and bearing rivet |
| 12071 | Resistor—120 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 12955 | Resistor—3,900 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 30886 | Screw—No. 8¾ self-tapping screw for adjusting lamp bracket |
| 36235 | Shaft—Tuning shaft |
| 35345 | Socket—Dial lamp socket—Model 15X- |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36227 | Switch—Tone switch—Model 15X |
| 36228 | Switch—Tone switch—Models 16X1, 16X2, 16X3 |
| 36232 | Transformer—First I-F transformer |
| 36233 | Transformer—Second I-F transformer |
| 36800 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES**<br>**(RL-81-A-5)** |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36240 | Back—Cabinet back—Models 15X, 16X1 |
| 36241 | Back—Cabinet back—Model 16X2 |
| 36302 | Back—Cabinet back—Model 16X3 |
| 36308 | Dial—Glass dial scale |
| 37831 | Fastener—Push on fastener for backs—Models 15X, 16X1, 16X2, 16X3 |
| 36722 | Knob—Tuning, tone or volume knob—Models 15X, 16X1, 16X3 |
| 36723 | Knob—Tuning, tone or volume knob—Model 16X2 |
| 11765 | Lamp—Dial lamp |

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES**<br>**(RC-462-A)**<br>**36X** |
| 36239 | Board—Terminal and receptacle board |
| 36238 | Bracket—Dial lamp bracket |
| 37359 | Capacitor—1 section of .005 mfd., and 1 section of 300 mmfd. |
| 12725 | Capacitor—150 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 35348 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts, and 1 section of 20 mfd., 150 volts |
| 35096 | Coil—Loop loading coil |
| 36801 | Coil—Oscillator coil |
| 36226 | Condenser—Variable tuning condenser |
| 36242 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (Approx. 49-in. overall lgth.) |
| 36237 | Drum—Drive drum |
| 36236 | Indicator—Station selector indicator |
| 36231 | Loop—Antenna loop complete |
| 38767 | Plate—Dial back plate and pulley assembly complete |
| 36230 | Pulley—Drive cord pulley and bearing rivet |
| 30189 | Resistor—120 ohms, ½ watt |
| 30694 | Resistor—3,900 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 30886 | Screw—No. 8¾ self-tapping screw for adjusting lamp bracket |
| 36235 | Shaft—Tuning shaft |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36228 | Switch—Tone switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 38994 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES**<br>**(RL-86-B1, RL-86-B4)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil—350 ohms |
| 39447 | Cone—Cone complete with voice coil |
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required. |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39777 | Back—Cabinet back |
| 39781 | Dial—Glass dial scale |
| 33006 | Feet—Rubber feet—Pkg. of 4 |
| 36722 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 30900 | Spring—Retaining spring for knob |

# MODELS 15X and 36X

## 2nd Prod. Chassis No. RC-1011

15X

36X

*In second production, the frequency range is 540-1,620 kc.*

## Specifications

FREQUENCY RANGE ..... 540-1,620 kc

INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT
Undistorted ..... 0.9 watts
Maximum ..... 1.4 watts

TUBE COMPLEMENT
(1) RCA-12SG7 ..... Converter
(2) RCA-12SK7 ..... I.F. Amplifier
(3) RCA-12SQ7 ..... 2nd Det., A.V.C., and A.F. Amplifier
(4) RCA-35L6GT ..... Power Output
(5) RCA-12J5GT ..... Oscillator
(6) RCA-35Z5GT ..... Rectifier

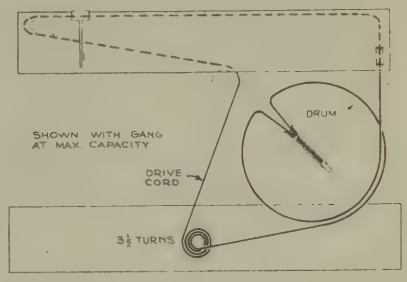
| LOUDSPEAKER | (RL-86B-1) | (RL-86B-4) |
|---|---|---|
| Type | 5-inch EM | 5-inch EM |
| V. C. Impedance | 3 ohms at 400 cycles | 4 ohms at 400 cycles |

| CABINET DIMENSIONS | Height | Width | Depth |
|---|---|---|---|
| 15X—2nd Prod. (Mahogany, Plastic) | 7¾-in. | 12-in. | 7-in. |
| 36X—2nd Prod. (Walnut, Wood) | 8 11/16-in. | 14¾-in. | 7½-in. |

POWER SUPPLY RATING
105-125 volts, AC, 50 or 60 cycles, or DC ..... 30 watts

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp.

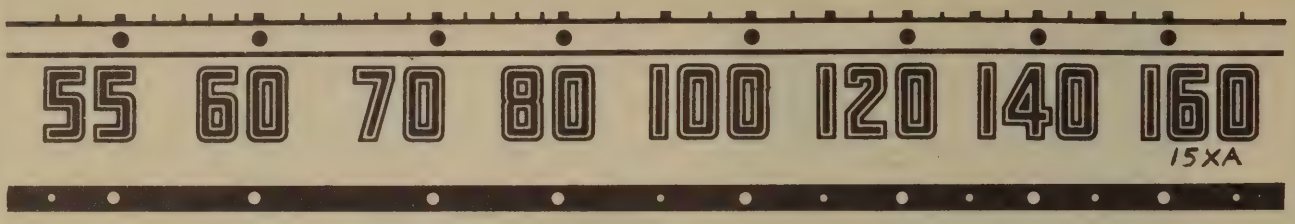
Tuning Drive Ratio ..... 16:1



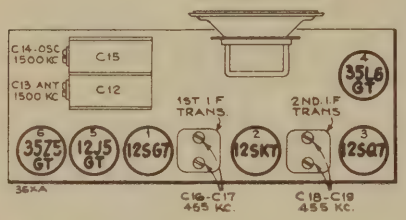

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1011)** |
| 34506 | Capacitor—.0018 mfd. |
| 14393 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 37359 | Capacitor—Comprising 1 section of .0003 mfd. and 1 section of .005 mfd. |
| 35348 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts and 1 section of 20 mfd., 150 volts |
| 39824 | Coil—Oscillator coil |
| 36226 | Condenser—Variable tuning condenser |
| 36242 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 50-in. overall length) |
| 36237 | Drum—Drive drum |
| 36236 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 39821 | Loop—Antenna loop |
| 36229 | Plate—Dial back plate complete with drive cord pulleys |
| 36230 | Pulley—Drive cord pulley |
| 30189 | Resistor—120 ohms, ½ watt |
| 30654 | Resistor—1,500 ohms, ½ watt |
| 12312 | Resistor—3,300 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 megohms, ½ watt |
| 30271 | Resistor—4.7 megohms, ½ watt |
| 38785 | Resistor—15 megohms, ½ watt |
| 36897 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket—wafer |
| 37605 | Socket—Tube socket—moulded |
| 31418 | Spring—Drive cord spring |
| 36228 | Switch—Tone switch |
| 36232 | Transformer—First I.F. transformer |
| 37364 | Transformer—Second I.F. transformer |
| 38994 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-86B-1)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil |
| 39447 | Cone—Cone complete with voice coil |
| | **(RL-86B-4)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil |
| 39447 | Cone—Cone complete with voice coil |
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required. |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39777 | Back—Back cover (36X—2nd Prod.) |
| 39953 | Back—Back cover (15X—2nd Prod.) |
| 36890 | Clamp—Dial clamp |
| 36891 | Clamp—Dial clamp |
| 39826 | Dial—Glass dial scale (36X—2nd Prod.) |
| 39954 | Dial—Glass dial scale (15X—2nd Prod.) |
| 37831 | Fastener—Push fastener for back (15X—2nd Prod.) |
| 36722 | Knob—Control knob |
| 30900 | Spring—Retaining spring for knobs |



*These dial scale drawings are full size reproductions. They can be used as direct substitutes for regular dial scales in alignment procedure. Top: 15X (2nd Prod.); bottom 36X (2nd Prod.).*

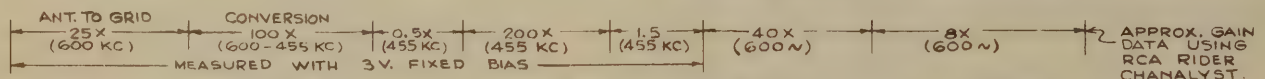


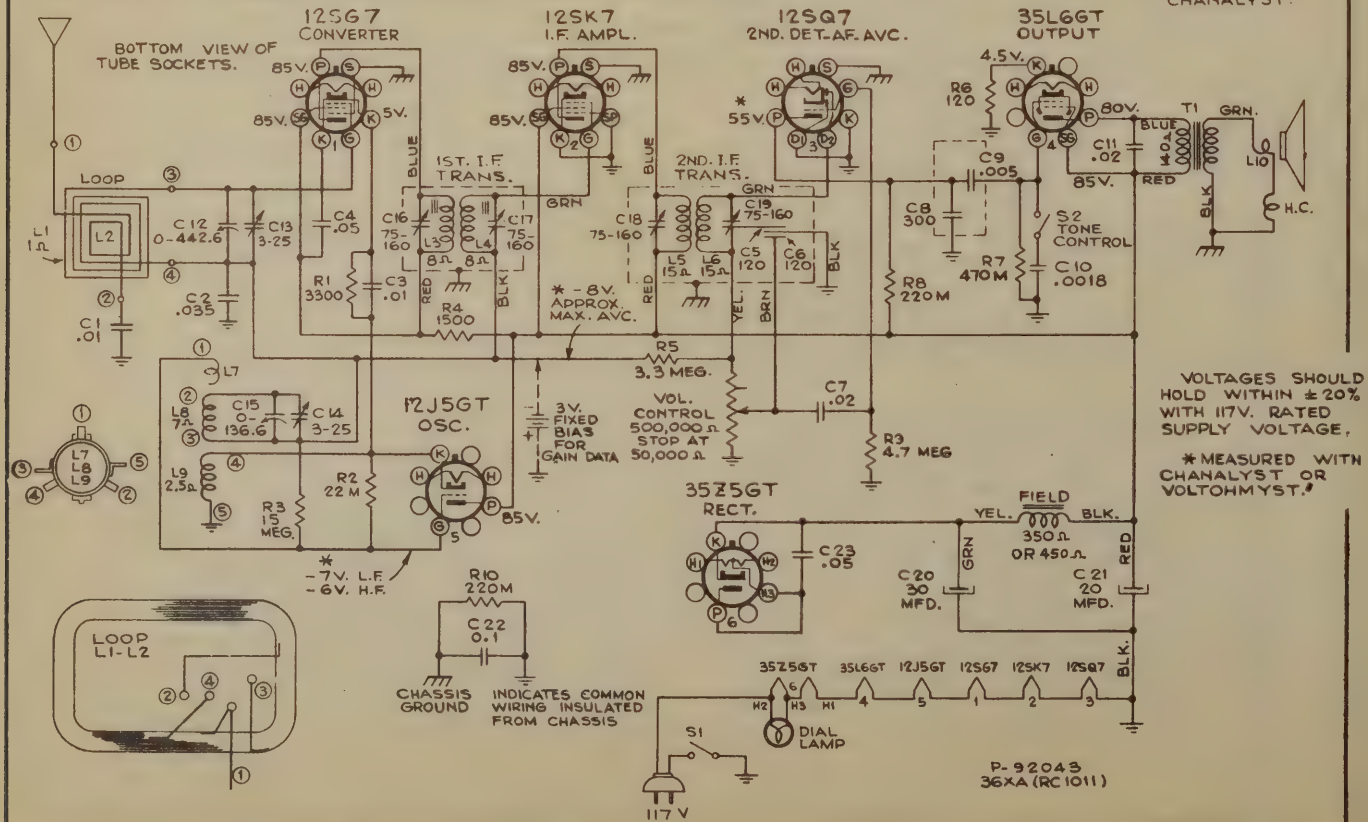

**Output Meter Alignment.** — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.** — For all alignment operations, keep the output as low as possible to avoid a-v-c action.

## Alignment Procedure

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet point 1,600 kc end of dial | C18 and C19 2nd I-F transformer |
| 2 | 1st Det. grid in series with .01 mfd. | | | C16 and C17 1st I-F transformer |
| 3 | Ant. terminal in series with 200 mmfd. | 1,500 kc | 1,500 kc | C14 (osc.) C13 (ant.) |
| 4 | Repeat step 3. | | | |



# Models VA-15, VA-22, and VA-24

## Victrola Attachments

### MODEL VA-15

Model VA-15 is an automatic record changer in a table cabinet, equipped with a compensated volume control. It has a plug for connection to the Phonograph jack that is provided on most RCA Victor models, and it may be connected to other models of radio receivers by using the Stock No. 9824 radio-phono switch.

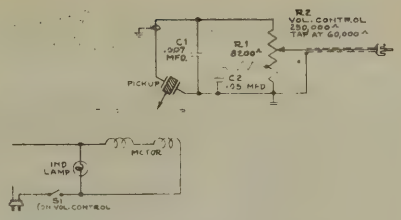
Specifications are as follows:

Record Capacity ..... Eight 10-inch or Seven 12-inch
Motor ..... Constant-speed, self-starting
Pickup ..... Crystal
Pickup Impedance .. 0.1 meg., at 1,000 cycles
Average Output .... 1½ volts across 0.5 meg.

**Power Supply Ratings**

105-125 volts, 60 cycles, 25 watts
105-125 volts, 50 cycles, 25 watts
105-125 volts, 25 cycles, 25 watts

Cabinet Dimensions ..... 9-19/32 in. x 19½ in. x 15-13/32 in.
**Weight, net** ..... 29 lbs.




*Model VA-15 Pickup and Motor Circuit*

*Model VA-15*

## Replacement Parts MODEL VA-15

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | STOCK No. | DESCRIPTION |
|---|---|---|---|
| | For Automatic Record Changer Parts, See Service Notes on RP-152. | 36386 | Decalcomania—"His Master's Voice" decal |
| | | 35467 | Decalcomania—"RCA Victrola" decal |
| | | 36809 | Hinge—Cabinet lid hinge |
| | | 36728 | Lamp—Compartment lamp |
| | MISCELLANEOUS ASSEMBLIES | 31470 | Mounting—Complete set of spring mounting for motorboard |
| 32556 | Cable—Phono input shield cable | 12673 | Knob—Volume control knob |
| 33595 | Cable—Phono output shield cable | 36246 | Receptacle—Needle book receptacle |
| 13103 | Cap—Pilot lamp cap | 14075 | Resistor—8,200 ohms, ¼ watt |
| 5148 | Capacitor—.007 mfd. | 4119 | Screw—No. 8-32 set screw for knob |
| 32787 | Capacitor—.05 mfd. | 37887 | Shade—Lamp shade |
| 36729 | Clamp—Lamp socket clamp | 19026 | Socket—Lamp socket |
| 31108 | Control—Volume control | 35787 | Socket—Phono input socket |
| 36328 | Cover—Compartment lamp lead cover | 36941 | Support—Cabinet lid support |

**MODEL VA-24 IS A COMBINATION OF VA-22 AND OSC. 22 WIRELESS OSCILLATOR.**

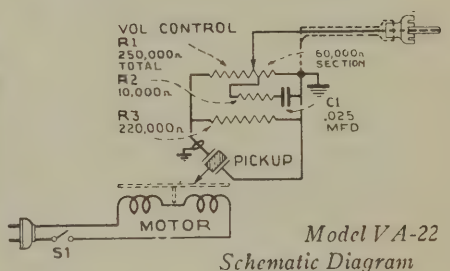
MODEL VA22

### Specifications MODEL VA-22

Record Capacity ..... Eight 10-inch or Seven 12-inch
MOTOR ..... Constant-speed, self-starting
PICKUP ..... Crystal
Pickup Impedance ..... 0.1 meg., at 1,000 cycles
Average Output ..... 1½ volts across 0.5 meg.

POWER SUPPLY RATINGS

A6 ..... 105-125 volts, 60 cycles, 25 watts
A5 ..... 105-125 volts, 50 cycles, 25 watts
B2 ..... 105-125 volts, 25 cycles, 25 watts
CABINET DIMENSIONS ..... 32-in. x 19⅝-in. x 15½-in.
Weight, gross ..... 59 lbs.




*Model VA-22 Schematic Diagram*

**2nd Production:**

The 2nd production of Model VA-22 uses mechanism similar to RP-139A and RP-145.

**For replacement parts, refer to the Service Data on RP-139A and RP-145 as specified below:**

**Stock No.**

PICKUP AND ARM ASSEMBLIES

Same as RP-145, except add:
33905 Crystal—Pickup crystal cartridge and needle screw for 25-cycle only

OPERATING MECHANISM, MOTOR ASSEMBLIES, MOTORBOARD ASSEMBLIES

For 110-volt, 60-cycles, same as RP-145.
For 110-volt, 25-cycles, same as RP-139A.

MISCELLANEOUS ASSEMBLIES

31108 Control—Volume control and power switch
12673 Knob—Volume control knob
31564 Receptacle—Needle card receptacle
4119 Screw—No. 8-82 headless set screw for knob, Stock No. 12673
31470 Springs—Motorboard mounting springs, screw and washer (4 required)

## Replacement Parts Model VA-22

| STOCK No. | DESCRIPTION |
|---|---|
| | For Automatic Record Changer Parts, See Service Notes on RP 145 |
| | MISCELLANEOUS ASSEMBLIES |
| 33595 | Cable—Shielded output cable with male plug |
| 4870 | Capacitor—.025 mfd. (C1) |
| 30698 | Hinge—Cabinet lid hinge |
| 31564 | Holder—Needle card holder |
| 12673 | Knob—Volume control knob |
| 14559 | Resistor—10,000 ohms, ¼ watt (R2) |
| 12264 | Resistor—220,000 ohms, ¼ watt (R3) |
| 4119 | Screw—Headless set screw for knob, No. 12673 |
| 31470 | Springs—Motorboard mounting springs, screw, and washers (4 req'd) |
| 33594 | Support—Cabinet lid support |
| 31108 | Volume control (R1) |

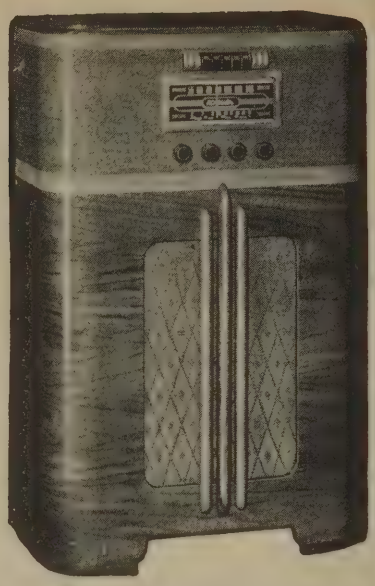
# MODELS 16K, 16T2 and 16T3

**Chassis No. RC-509C RC-509B RC-509A**

## Six-Tube, Two-Band, AC, Superheterodyne Receivers

*Model 16T2*

*Model 16T3*



*Model 16K*

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Broadcast | 540-1,560 kc |
| Short Wave | 5.8-18 mc |
| INTERMEDIATE FREQUENCY | 455 kc |

PUSH BUTTON FREQUENCY RANGES (Models 16K and 16T3)

One station between approximately 540-1,030 kc
One station between approximately 610-1,250 kc
Two stations between approximately 740-1,430 kc
One station between approximately 880-1,560 kc

TUBE COMPLEMENT

| | | |
|---|---|---|
| (1) | RCA-6SK7 | R-F Amplifier |
| (2) | RCA-6SA7 | 1st Det., Oscillator |
| (3) | RCA-6SK7 | I-F Amplifier |
| (4) | RCA-6SQ7 | 2nd Det., A.V.C., and A-F Amplifier |
| (5) | RCA-6K6GT | Power Output |
| (6) | RCA-5Y3-G | Rectifier |

PILOT LAMP
Mazda No. 51, 7.5 volts, 0.20 amp.

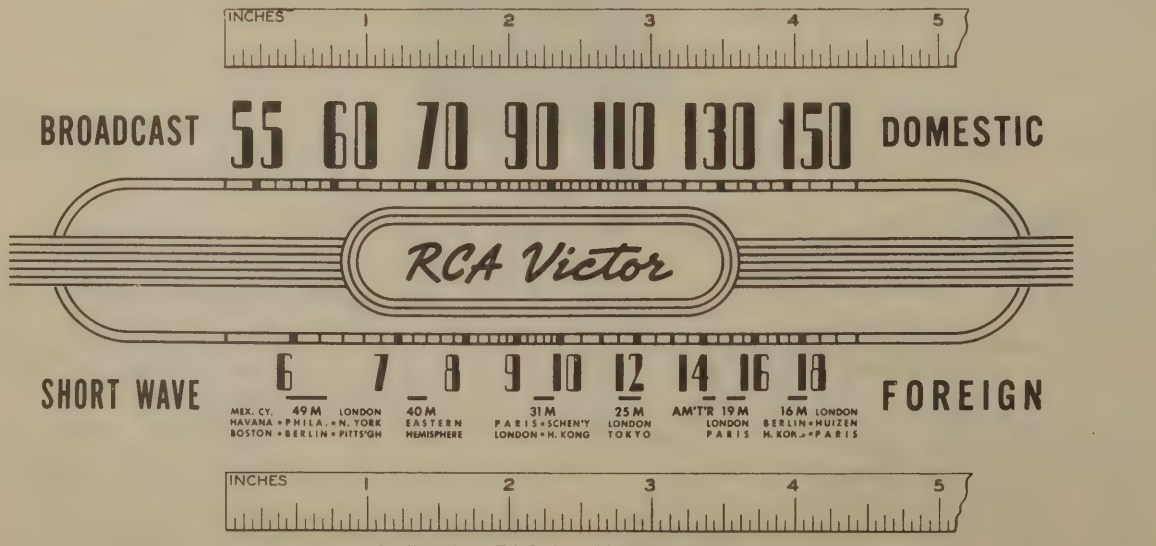
POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

| LOUDSPEAKERS | 16K | 16T2, 16T3 |
|---|---|---|
| Size | 12-inch | 6-inch |
| V. C. impedance at 400 cycles | 2.2 ohms | 3.4 ohms |
| Identification Number | RL-70H6 | RL-79B1 |

POWER SUPPLY RATINGS

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 70 watts |
| 105-125 volts, 25-60 cycles | 70 watts |
| 105-125, 200-250 volts, 50-60 cycles | 70 watts |


INCHES 1 2 3 4 5
BROADCAST 55 60 70 90 110 130 150 DOMESTIC
RCA Victor
SHORT WAVE 6 7 8 9 10 12 14 16 18 FOREIGN
MEX. CY. HAVANA • BOSTON • 49 M PHILA. • BERLIN • LONDON N. YORK PITTS'GH
40 M EASTERN HEMISPHERE
31 M PARIS • LONDON • SCHEN'Y H. KONG
25 M LONDON TOKYO
AM'T'R LONDON PARIS 19 M
16 M BERLIN • H. KOR. • LONDON HUIZEN PARIS
INCHES 1 2 3 4 5

*Calibration Dial for Model 16K*

REFER TO PAGE 350C FOR SUPPLEMENTARY INFORMATION

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagrams.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or Volt Ohmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. Or, if necessary, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

Each method is described below.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

4. After completion of the alignment, replace the glass dial in cabinet, taking care that the fibre light shields are in correct position at ends of dial.

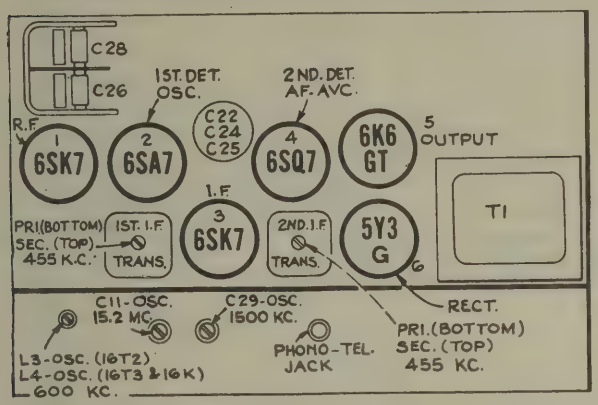
**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

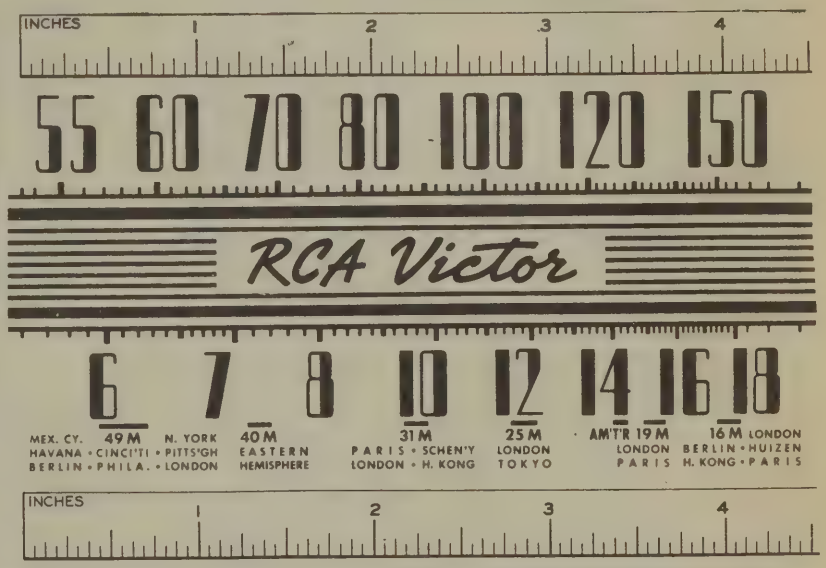
2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale. For example, 1,500 kc is approximately 4 inches from the reference mark.

**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.




*Models 16K, 16T2, 16T3*



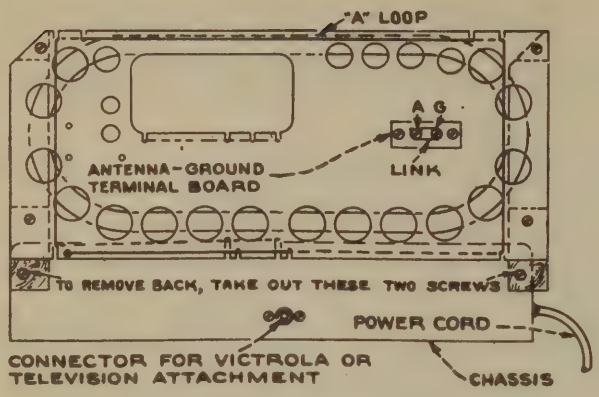

*At Right—Calibration scale for 16T2, 16T3*

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | "A" band, Quiet Point at 1,500 kc end of dial | L7 and L8 (2nd I.F. Trans.) |
| 2 | 1st det. grid, in series with .01 mfd. | | | L5 and L6 (1st I.F. Trans.) |
| 3 | Antenna terminal, in series with 300 ohms (link open) | 15.2 mc | 15.2 mc "C" band | C11 (osc.)* C2 (ant.) |
| 4 | Antenna terminal, in series with 200 mmfd. (link open) | 1,500 kc | 1,500 kc "A" band | C29 (osc.) C3 (ant.) |
| 5 | | 600 kc | 600 kc "A" band | L3 (in 16T2) L4 (in 16K and 16T2) Rock in |
| 6 | Repeat steps 4 and 5. | | | |

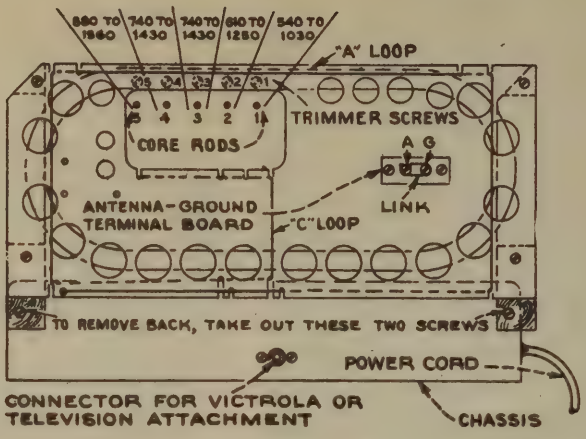
In case of instability during R-F alignment, connect a 27,000 ohm ¼ watt resistor across "D" and "F" of 2nd I-F transformer.

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used, by tuning receiver to 14.29 mc, where a weaker signal should be received.

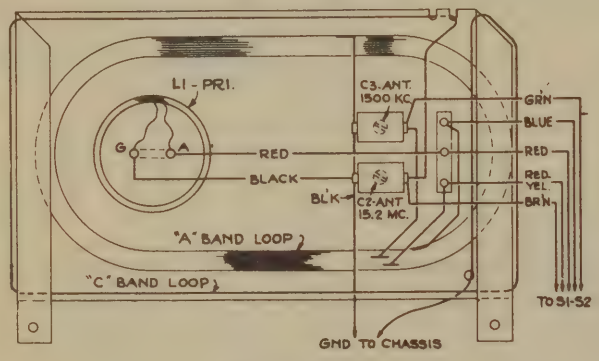
**Note:** Oscillator tracks **above** signal on both band



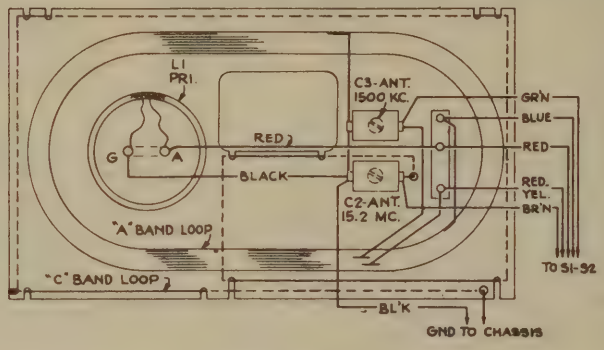

*Model 16T2*



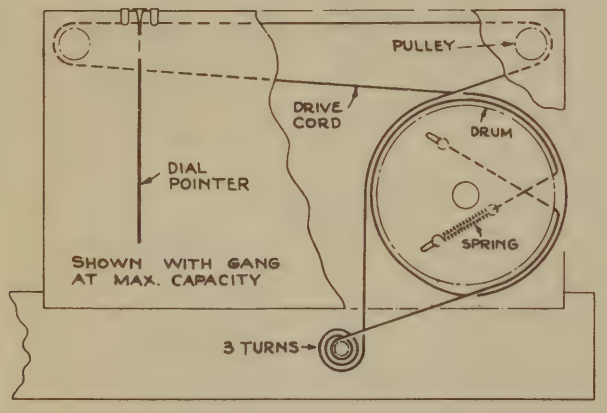

*Model 16K, 16T3*




*Model 16T2*




*Model 16K, 16T3*




**Precautionary Lead Dress:—**

1. Dress red leads from C band trimmer to coil and switch away from each other (16T2).
2. Keep bus from range switch to lance short as possible (16T2).
3. Tape together red, blue, and brown leads from chassis to loop (16T2).
4. Dress yellow lead from IF to tone switch up away from chassis.
5. Dress C-20 from volume control up away from chassis.
6. Keep grid end of R-12 as short as possible.
7. Dress C-30 away from red and brown A.C. leads.
8. Dress power transformer leads down against chassis.
9. Dress brown power transformer leads back away from IF transformer.

*At left—Dial Drive in Models 16K, 16T2, 16T3*

## Push Button Adjustment (Models 16K and 16T3)

The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

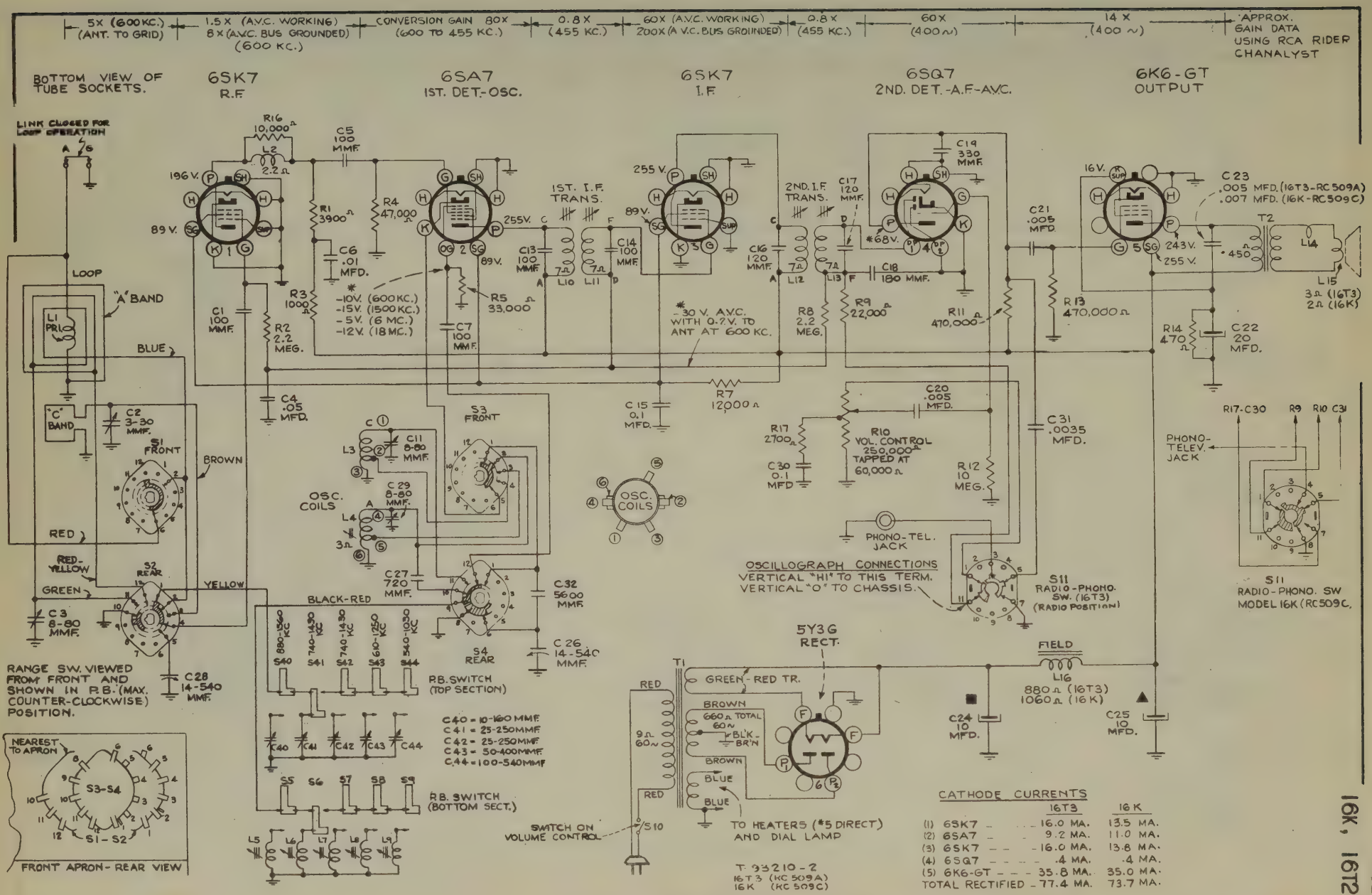
The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast (BC) position and manually tune in the first station on the list.
3. Turn range switch to push-button (PB) position and press in the left-hand button.
4. Unscrew the push-button loop trimmers to minimum capacity.
5. Adjust L9 to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust L9 for peak output.
6. Adjust C44 for peak output on the first station.
7. Proceed in the same manner to adjust for the remaining four stations.

Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. The procedure outlined above (backing the push-button loop trimmers to minimum capacity before adjusting the cores) will reduce this effect.

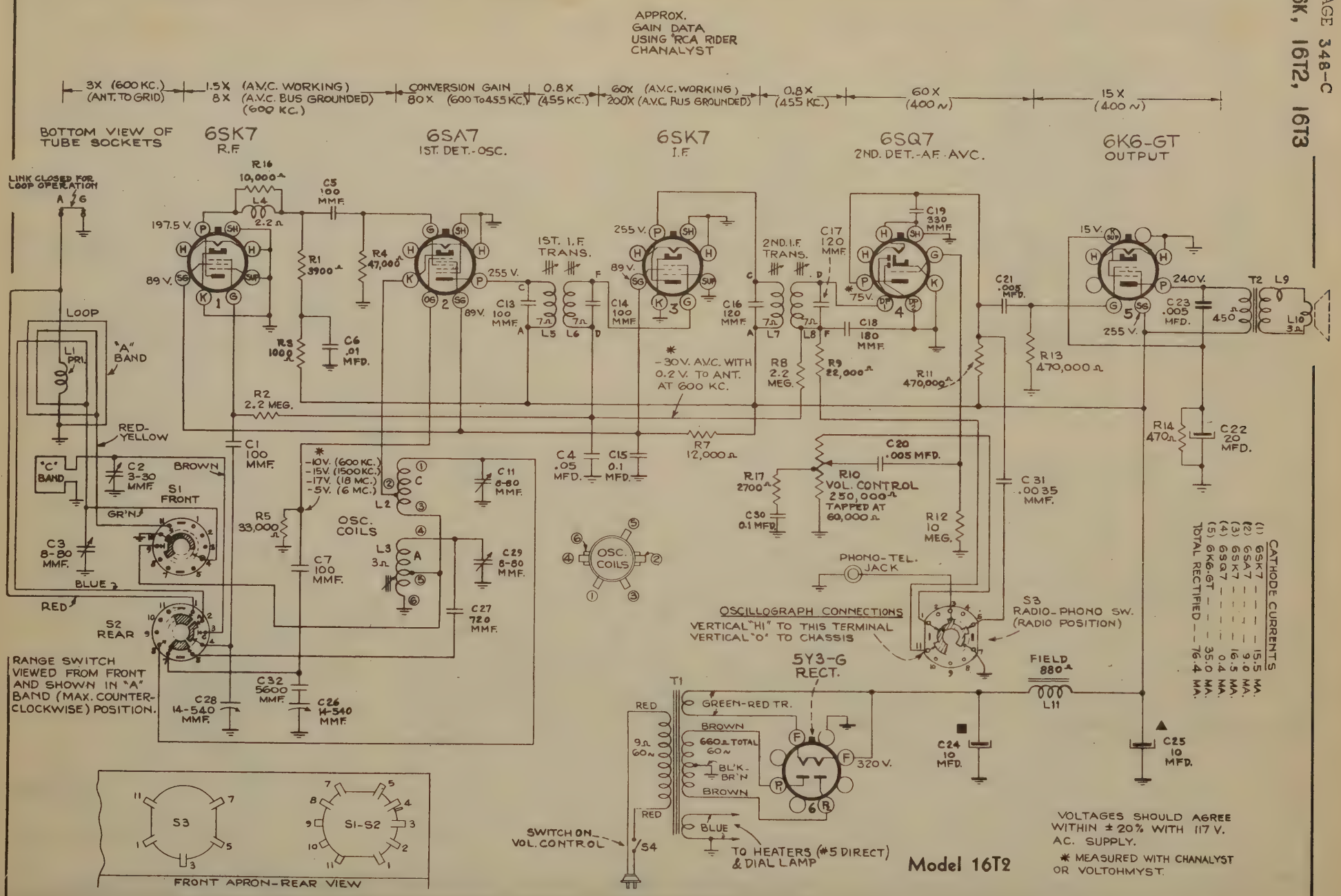
On the 880 to 1,560 kc push-button, the higher frequency stations may be received with L5 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

**NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**

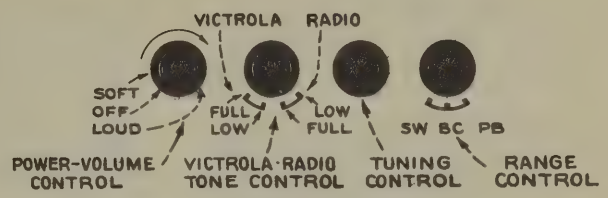



## Models 16K and 16T3

REFER TO PAGE 350C FOR SUPPLEMENTARY INFORMATION


APPROX. GAIN DATA USING RCA RIDER CHANALYST
3X (600 KC.) (ANT. TO GRID)
1.5X (A.V.C. WORKING) 8X (A.V.C. BUS GROUNDED) (600 KC.)
CONVERSION GAIN 80X (600 TO 455 KC.)
0.8X (455 KC.)
60X (A.V.C. WORKING) 200X (A.V.C. BUS GROUNDED)
0.8X (455 KC.)
60X (400 ~)
15X (400 ~)
BOTTOM VIEW OF TUBE SOCKETS
6SK7 R.F.
6SA7 1ST. DET.-OSC.
6SK7 I.F.
6SQ7 2ND. DET.-AF.-AVC.
6K6-GT OUTPUT
LINK CLOSED FOR LOOP OPERATION
LOOP
L1 PRI.
"A" BAND
"C" BAND
S1 FRONT
S2 REAR
GR'N
BROWN
BLUE
RED
RED-YELLOW
C1 100 MMF.
C2 3-30 MMF.
C3 8-80 MMF.
R1 3900Ω
R2 2.2 MEG.
R3 100Ω
R4 47,000Ω
R5 33,000Ω
C5 100 MMF.
C6 .01 MFD.
C7 100 MMF.
R16 10,000Ω
L4 2.2Ω
197.5 V.
89 V.
255 V.
1ST. I.F. TRANS.
C13 100 MMF.
C14 100 MMF.
L5
L6
C4 .05 MFD.
C15 0.1 MFD.
R7 12,000Ω
* -30 V. A.V.C. WITH 0.2 V. TO ANT. AT 600 KC.
2ND. I.F. TRANS.
C16 120 MMF.
C17 120 MMF.
C18 180 MMF.
C19 330 MMF.
L7
L8
R8 2.2 MEG.
R9 22,000Ω
R11 470,000Ω
75 V.
C21 .005 MFD.
R13 470,000Ω
15 V.
240 V.
T2
L9
L10 3Ω
C23 .005 MFD.
450 ~
255 V.
R14 470Ω
C22 20 MFD.
C20 .005 MFD.
R10 VOL. CONTROL 250,000Ω TAPPED AT 60,000Ω
R12 10 MEG.
R17 2700Ω
C30 0.1 MFD.
C31 .0035 MMF.
PHONO-TEL. JACK
S3 RADIO-PHONO SW. (RADIO POSITION)
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS
* -10V. (600 KC.) -15V. (1500 KC.) -17V. (18 MC.) -5V. (6 MC.)
OSC. COILS
L2
L3 3Ω
C11 8-80 MMF.
C29 8-80 MMF.
C27 720 MMF.
C32 5600 MMF.
C28 14-540 MMF.
C26 14-540 MMF.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAX. COUNTER-CLOCKWISE) POSITION.
5Y3-G RECT.
T1
RED
GREEN-RED TR.
BROWN
660Ω TOTAL 60 ~
BL'K-BR'N
BROWN
RED
BLUE
9Ω 60 ~
320 V.
FIELD 880Ω
L11
C24 10 MFD.
C25 10 MFD.
SWITCH ON VOL. CONTROL
S4
TO HEATERS (#5 DIRECT) & DIAL LAMP
S3
S1-S2
FRONT APRON-REAR VIEW
CATHODE CURRENTS
(1) 6SK7 — — — 15.5 MA.
(2) 6SA7 — — — 9.0 MA.
(3) 6SK7 — — — 16.5 MA.
(4) 6SQ7 — — — 0.4 MA.
(5) 6K6-GT — — — 35.0 MA.
TOTAL RECTIFIED — 76.4 MA.
VOLTAGES SHOULD AGREE WITHIN ± 20% WITH 117 V. A.C. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
Model 16T2

*Model 16T2*




*Model 16K, 16T3*

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | MODEL 16T2 (RC-509B)<br>MODEL 16T3 (RC-509A)<br>MODEL 16K (RC-509C) |
| 34785 | Board—"Antenna-Ground" board |
| 35857 | Capacitor—Mica trimmer—1 section of 3-30 mmfd. and 1 section of 8-80 mmfd. |
| 35867 | Capacitor—Mica trimmer comprising 2 sections of 8-80 mmfd. |
| 35869 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd., and 1 section of 100-540 mmfd. (Models 16T3 and 16K) |
| 34699 | Capacitor—100 mmfd., mica |
| 12720 | Capacitor—100 mmfd., moulded |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 12952 | Capacitor—330 mmfd. |
| 35877 | Capacitor—720 mmfd. |
| 13895 | Capacitor—5,600 mmfd. |
| 30303 | Capacitor—.0035 mfd. (Models 16T2 and 16T3) |
| 33640 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 35858 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts |
| 35876 | Coil—Coil and resistor assembly [R16 and L2 (L4 in 16T2)] |
| 35785 | Coil—Loop primary (L1) |
| 35803 | Coil—Oscillator coils for push button switch—(Models 16T3 and 16K) |
| 35854 | Coil—Oscillator coil |
| 35874 | Condenser—Variable tuning condenser |
| 35861 | Control—Tone control—(Models 16T3 and 16T2) |
| 35935 | Control—Tone control—(Model 16K) |
| 35859 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35871 | Core—Adjusting core and stud for oscillator coils—(Models 16T3 and 16K) |
| 35788 | Core—Core and stud for oscillator coil |
| 35870 | Indicator—Station selector indicator |
| 35856 | Loop—Antenna loop winding |
| 35855 | Loop—Antenna loop complete |
| 35936 | Plate—Dial back plate—(Model 16K) |
| 35873 | Plate—Dial back plate—(Model 16T2) |
| 35872 | Plate—Dial back plate—(Model 16T3) |
| 5119 | Plug—3-contact female plug for speaker cable—(Model 16K) |
| 32289 | Pulley—Drive cord pulley and rivet |
| 30681 | Resistor—470 ohms, 1 watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 14024 | Resistor—2,700 ohms, ½ watt |
| 30694 | Resistor—3,900 ohms, ½ watt |
| 35875 | Resistor—12,000 ohms, 3 watts |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35862 | Shaft—Tuning shaft |
| 35772 | Shield—Power transformer bottom shield |
| 35934 | Shield—Power transformer top shield assembly |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono. input socket |
| 31251 | Socket—Tube socket |

| STOCK No. | DESCRIPTION |
|---|---|
| 31418 | Spring—Drive cord spring |
| 35868 | Switch—Push button switch—(Models 16T3 and 16K) |
| 35864 | Switch—Range switch—(Models 16T3 and 16K) |
| 35865 | Switch—Range switch—(Model 16T2) |
| 35636 | Transformer—First I-F transformer |
| 35790 | Transformer—Second I-F transformer |
| 35588 | Transformer—Power transformer—110 volts, 25 cycle |
| 35587 | Transformer—Power transformer—110 volts, 60 cycle—(Model 16K) |
| 35853 | Transformer—Power transformer—less end shields—110 volts, 60 cycle (Models 16T2 and 16T3) |
| 33726 | Washer—"C" washer for tuning shaft |
| | SPEAKER ASSEMBLIES<br>(RL-70H6)<br>Model 16K |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil |
| 33116 | Coil—Speaker field coil |
| 31275 | Cone—Speaker cone, voice coil, and dust cap |
| 5118 | Plug—3-contact male for speaker |
| 31301 | Transformer—Output transformer |
| | SPEAKER ASSEMBLIES<br>(RL-79B1)<br>Models 16T2 and 16T3 |
| 35849 | Cap—Dust cap |
| 35880 | Coil—Field coil |
| 35441 | Cone—Cone complete with voice coil |
| 35879 | Transformer—Output transformer |
| | MISCELLANEOUS ASSEMBLIES |
| 35883 | Button—Push button—(Models 16T3 and 16K) (dark brown) |
| 36299 | Button—Push button (light brown) |
| 35921 | Decalcomania—Control panel decal—(Model 16T2) |
| 35920 | Decalcomania—Control panel decal—(Models 16T3 and 16K) |
| 35393 | Decalcomania—"Television" decal |
| 35938 | Dial—Glass dial scale—(Model 16K) |
| 35918 | Dial—Glass dial scale—(Model 16T2) |
| 35917 | Dial—Glass dial scale—(Model 16T3) |
| 35937 | Escutcheon—Dial scale escutcheon—(Model 16K) |
| 35882 | Escutcheon—Dial scale escutcheon—(Model 16T2) |
| 35915 | Escutcheon—Dial scale escutcheon—less dial—(Model 16T3) |
| 35881 | Escutcheon—Push button escutcheon—(Models 16T3 and 16K) |
| 35814 | Knob—Tone control or range switch knob (dark brown) |
| 36297 | Knob—Tone control or range switch knob (light brown) |
| 35775 | Knob—Tuning or volume control knob (dark brown) |
| 36298 | Knob—Tuning or volume control knob (light brown) |
| 11765 | Lamp—Dial lamp |
| 36149 | Marker—Station selector marker |
| 34053 | Spring—Retaining spring for button Stock No. 35883 |
| 30900 | Spring—Retaining spring for knobs Stock Nos. 35814 and 35775 |

REFER TO PAGE 350C FOR SUPPLEMENTARY INFORMATION

## MODELS 16T2, 16T3, 16T4

### 2nd Production (RC-509J, H, F):

In the 1st Production of these models, "A" band covers 540-1,560 k. c. In 2nd Production, the range is extended to cover 540-1,600 k. c.

Calibration scales for use in alignment of the 2nd Production receivers are printed on this page.

Also in 2nd Production, the volume control is changed from .25 meg. to 2 megs. and the circuit is revised to isolate the control from the diode d-c current as shown in the accompanying sketches. This isolation reduces the possibility of controls becoming "noisy." These changes should be made on any 1st Production receivers when this trouble is encountered.

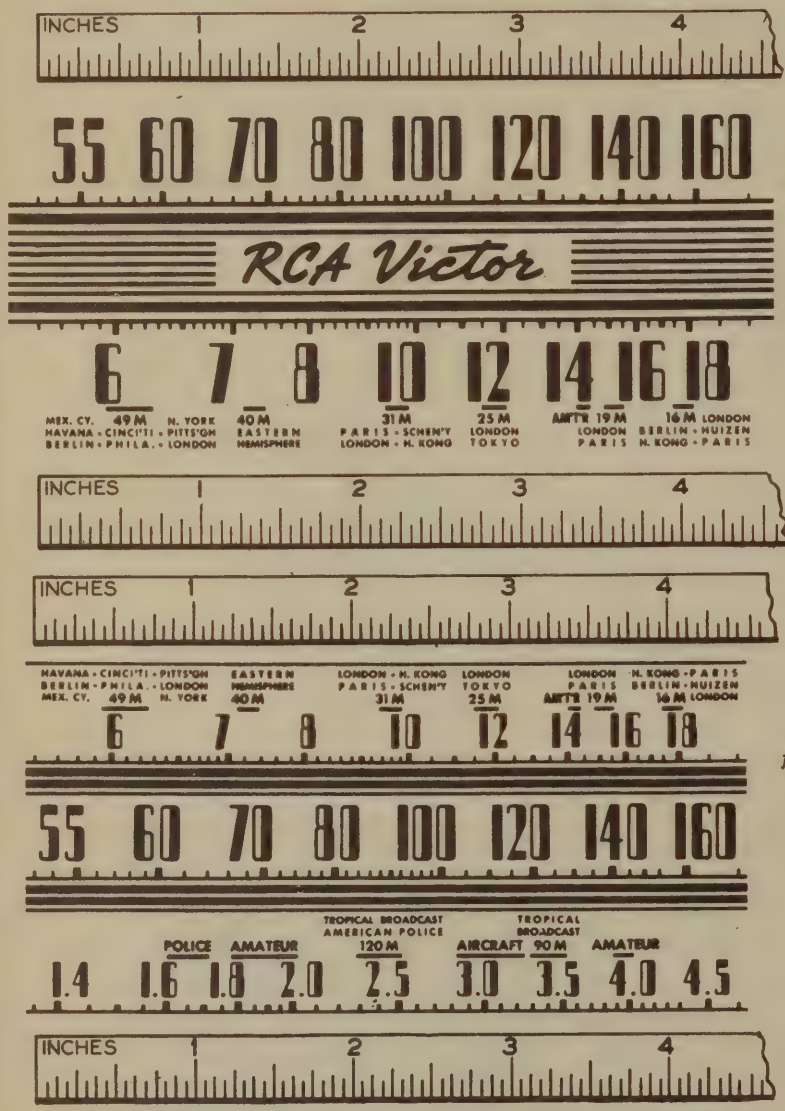
For replacement parts lists, refer to the original Service Notes, except for the following items which are used in 2nd Production:

MODEL 16T4 (2nd Prod., RC-509F)

| Stock No. | Description |
|---|---|
| 37133 | Coil—Push button oscillator coil for 540-1,030 kc range (used in 1st and 2nd production) |
| 37955 | Control—Tone control |
| 36486 | Control—Volume control and power switch |
| 35883 | Button—Push button, dark brown |
| 36300 | Button—Push button, light brown |
| 37956 | Dial—Glass dial scale |
| 36149 | Marker—Push button markers |

MODEL 16T2 (2nd Prod., RC-509J).
MODEL 16T3 (2nd Prod., RC-509H)

| Stock No. | Description |
|---|---|
| 37133 | Coil—Push button oscillator coil for 540-1,030 kc range (used in 1st and 2nd production) |
| 36486 | Control—Volume control and power switch |
| 12738 | Resistor—27,000 ohm, ½ watt |
| 30651 | Resistor—270,000 ohm, ½ watt |
| 37608 | Switch—Tone switch |
| 35883 | Button—Push button, dark brown (16T3) |
| 36300 | Button—Push button, light brown (16T3) |
| 37346 | Dial—Glass dial scale for 16T2 |
| 37345 | Dial—Glass dial scale for 16T3 |
| 36149 | Marker—Push button markers (16T3) |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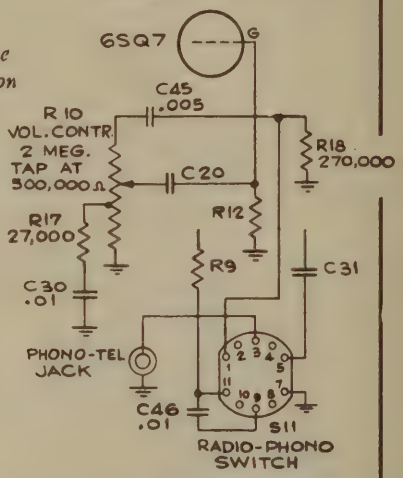
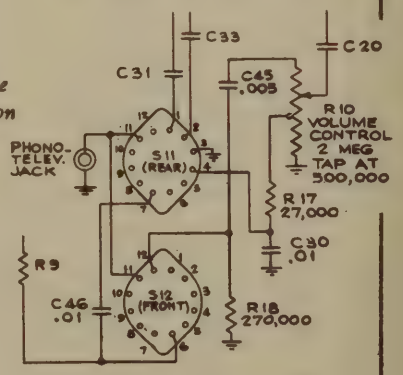
55 60 70 80 100 120 140 160
RCA Victor
6 7 8 10 12 14 16 18
MEX. CY. 49 M HAVANA • CINCI'TI • PITTS'GH BERLIN • PHILA. • LONDON N. YORK
40 M EASTERN HEMISPHERE
31 M PARIS • SCHEN'Y LONDON • H. KONG
25 M LONDON TOKYO
ANK'R 19 M LONDON PARIS
16 M LONDON BERLIN • HUIZEN H. KONG • PARIS
INCHES 1 2 3 4
INCHES 1 2 3 4
HAVANA • CINCI'TI • PITTS'GH BERLIN • PHILA. • LONDON MEX. CY. 49 M N. YORK
EASTERN HEMISPHERE 40 M
LONDON • H. KONG PARIS • SCHEN'Y 31 M
LONDON TOKYO 25 M
LONDON PARIS ANK'R 19 M
H. KONG • PARIS BERLIN • HUIZEN 16 M LONDON
6 7 8 10 12 14 16 18
55 60 70 80 100 120 140 160
TROPICAL BROADCAST AMERICAN POLICE
TROPICAL BROADCAST
POLICE AMATEUR 120 M AIRCRAFT 90 M AMATEUR
1.4 1.6 1.8 2.0 2.5 3.0 3.5 4.0 4.5
INCHES 1 2 3 4

*Calibration Scale for 2nd Production 16T2, 16T3.*




*Volume Control Circuit in 2nd Production 16T2, 16T3.*

*Calibration Scale for 2nd Production 16T4.*




*Volume Control Circuit in 2nd Production 16T4.*

## MODELS 16K and 16T3

### 2,400 KC Police Band:

Where desirable, reception of a police station in the 2,400 kc band may be obtained by adding a jumper connection from trimmer C-3 to trimmer C-40, and lining up push button No. 5 to the desired police station. Re-alignment of C-3 at 1,500 kc will be necessary.

## MODELS 16K, 16T3, 16T4

### Failure to Oscillate on Push-Button Tuning:

Should a case of non-oscillation on any push-button range be experienced, check the oscillator grid leak to assure that it is 56,000 ohms. Some sets employed a 33,000 ohm leak which was occasionally found troublesome with low line voltage.

### Low-Frequency Oscillator Push-Button Coil:

To ensure low-frequency coverage on the push-button oscillator coils in these models, a high-inductance coil, Stock No. 37133, is used for the 540-1,030 kc push-button oscillator ranges.

## 16K, 16T2, 16T3, 16T4

### Increasing Sensitivity:

These models have an untuned R-F stage which is resistance-coupled to the 1st-detector. The sensitivity may be increased by changing the R-F plate load resistor to a higher value, between 6,000 and 10,000 ohms. This change is not recommended in metropolitan localities owing to possiblity of cross-modulation.

# MODEL 16T4

## Chassis No. RC-509

## Six-Tube, Three-Band, AC, Superheterodyne Receiver

### Electrical and Mechanical Specifications

**Frequency Ranges**

| | |
|---|---|
| Broadcast | 540-1,560 kc |
| "B" Band | 1.4-4.5 mc |
| "C" Band | 5.8-18 mc |
| Intermediate Frequency | 455 kc |

**Push Button Frequency Ranges**

One station between approximately 540-1,030 kc
One station between approximately 610-1,250 kc
Two stations between approximately 740-1,430 kc
One station between approximately 880-1,560 kc

**Tube Complement**

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Det., Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Det., A.V.C. and A-F Amplifier |
| (5) RCA-6K6GT | Power Output |
| (6) RCA-5Y3-G | Rectifier |

**Pilot Lamp**

Mazda No. 51, 7.5 volts, 0.20 amp.

**Power Output Rating**

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

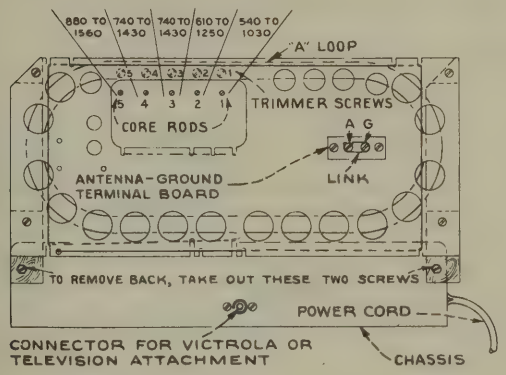
**Loudspeakers**

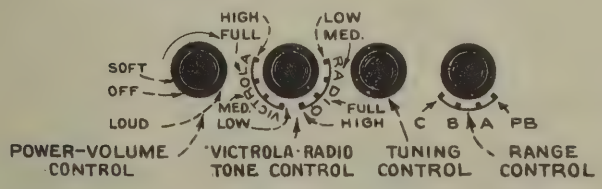
| | |
|---|---|
| Size | 6-inch |
| V.C. impedance at 400 cycles | 3.4 ohms |
| Identification Number | RL-79B1 |

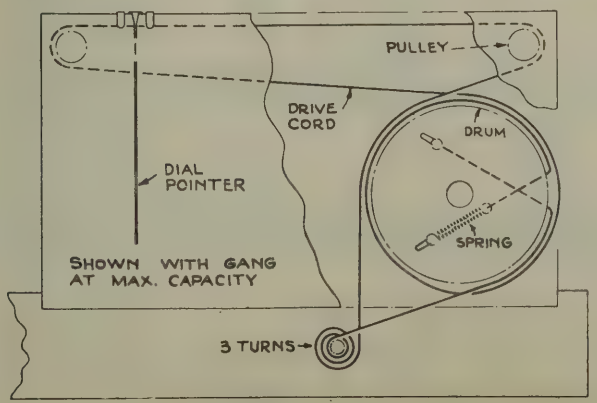
**Power Supply Ratings**

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 70 watts |
| 105-125 volts, 25-60 cycles | 70 watts |
| Tuning Drive Ratio | 12 to 1 |

| | |
|---|---|
| Height (inches) | 9⅞ |
| Width (inches) | 19¼ |
| Depth (inches) | 8¾ |
| Weight, lbs. net | 17¾ |




### Push Button Adjustment

The push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across "A" and "G" terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L9) to receive the station.
4. After oscillator core is adjusted properly, adjust C-44 for maximum output.
   Owing to the relatively high RF gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push-button loop trimmers to minimum capacity before adjusting the push-button magnetite cores.
   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

### Tone Control

The tone control has four positions for radio, and four positions for Victrola or Television sound:

No. 1—Radio—maximum low—minimum high
No. 2—Radio—maximum low—reduced high
No. 3—Radio—maximum low—maximum high
No. 4—Radio—minimum low—maximum high
No. 5—Phono—maximum low—minimum high
No. 6—Phono—maximum low—reduced high
No. 7—Phono—maximum low—maximum high
No. 8—Phono—minimum low—maximum high

(No. 1 is full counter-clockwise, and No. 8 is full clockwise.)

REFER TO PAGE 350C FOR SUPPLEMENTARY INFORMATION

16T4

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagrams.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or Volt Ohmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. Or, if necessary, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

Each method is described below.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

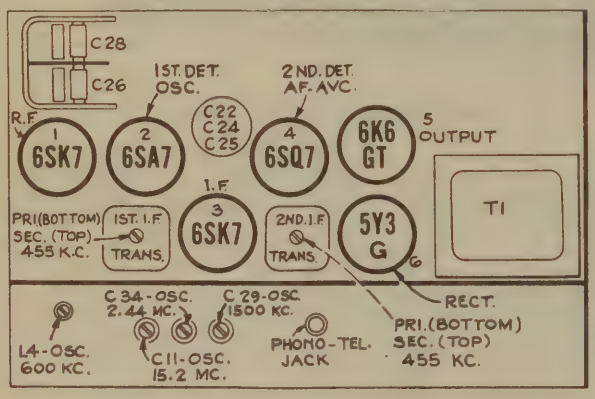
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

4. After completion of the alignment, replace the glass dial in cabinet, taking care that the fibre light shields are in correct position at ends of dial.

**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.




2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

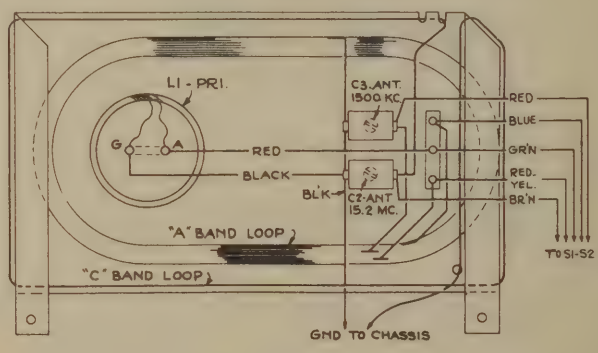
3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale. For example, 1,500 kc is approximately 4 inches from the reference mark.

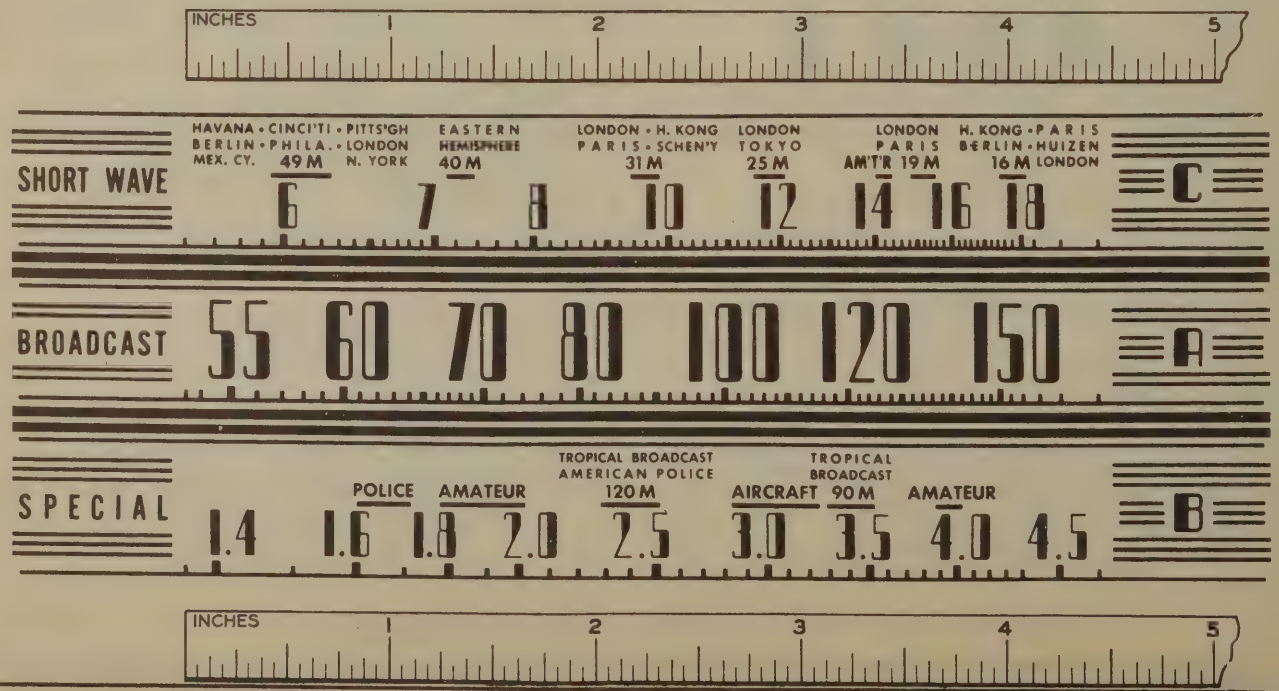
**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

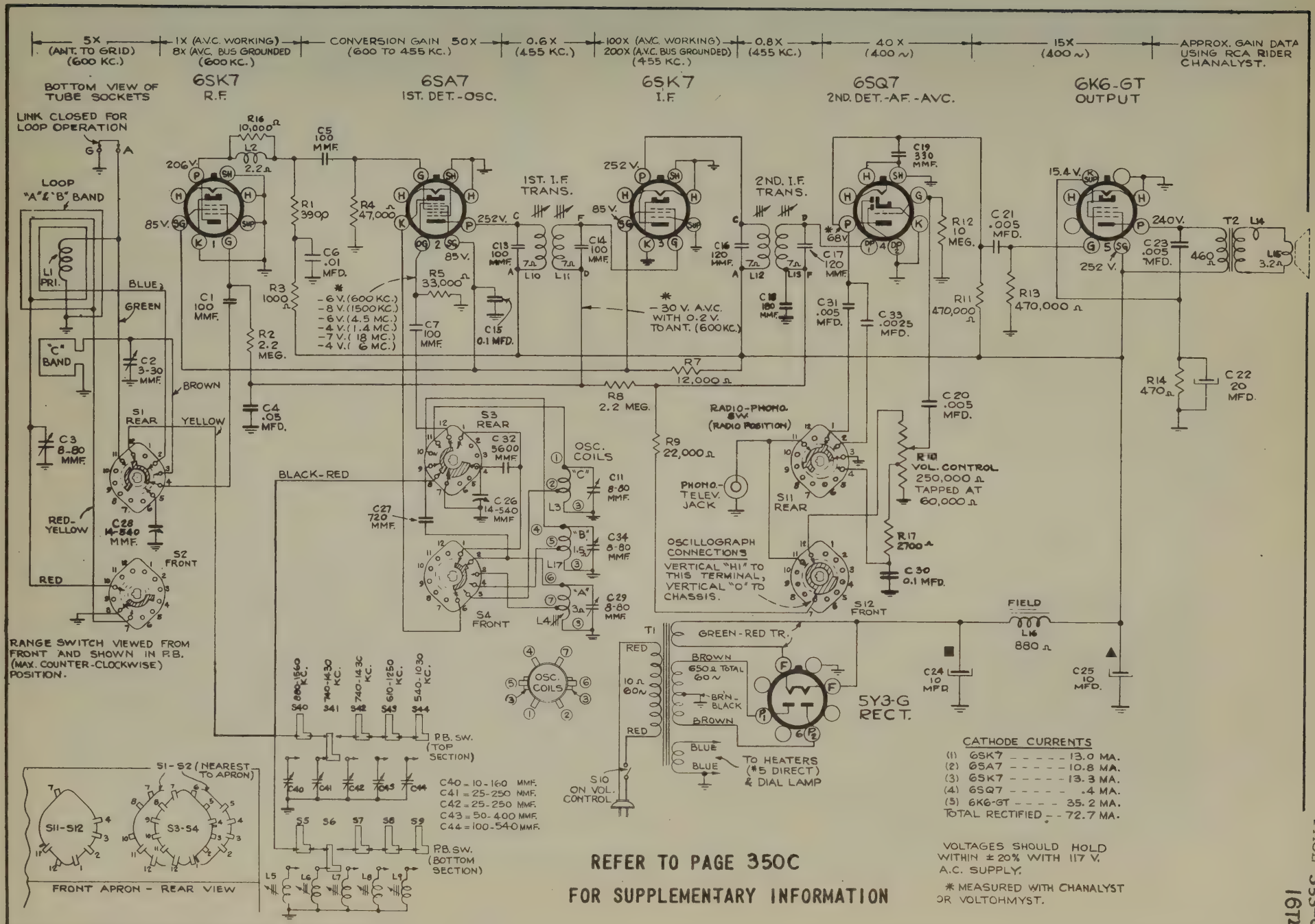
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 | 455 kc | "A" band, Quiet Point at 1,500 kc end of dial | L12 and L13 (2nd I.F. Trans.) |
| 2 | 1st-Det. grid, in series with .01 | | | L10 and L11 (1st I.F. Trans.) |
| 3 | Antenna terminal, in series with 300 ohms (link open) | 15.2 mc | 15.2 mc "C" band | C11 (osc.)* C2 (ant.) |
| 4 | | 2.44 mc | 2.44 mc "B" band | C34 (osc.) Rock in |
| 5 | Antenna terminal, in series with 200 mmfd. (link open) | 1,500 kc | 1,500 kc "A" band | C29 (osc.) C3 (ant.) |
| 6 | | 600 kc | 600 kc "A" band | L4 Rock in |
| 7 | Repeat steps 5 and 6. | | | |

* Use minimum capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used, by tuning receiver to 14.29 mc, where a weaker signal should be received.

Note: Oscillator tracks above signal on all bands.






REFER TO PAGE 350C FOR SUPPLEMENTARY INFORMATION

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-509)** |
| 34785 | Board—"Antenna-Ground" board |
| 35857 | Capacitor—Mica trimmer—1 section of 3-30 mmfd. and 1 section of 8-80 mmfd. |
| 35866 | Capacitor—Mica trimmer—3 sections of 8-80 mmfd. |
| 35869 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 12720 | Capacitor—100 mmfd. (C1, C5, C7) |
| 34699 | Capacitor—100 mmfd. |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. (C18) |
| 12952 | Capacitor—330 mmfd. (C19) |
| 35877 | Capacitor—720 mmfd. (C27) |
| 13895 | Capacitor—5,600 mmfd. (C32) |
| 34459 | Capacitor—.0025 mfd. (C33) |
| 33640 | Capacitor—.005 mfd. (C20, C21, C23, C31) |
| 4937 | Capacitor—.01 mfd. (C6) |
| 32787 | Capacitor—.05 mfd. (C4) |
| 4839 | Capacitor—0.1 mfd. (C15, C30) |
| 35858 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 450 volts and 1 section of 20 mfd., 25 volts |
| 35876 | Coil—Coil and resistor assembly (L2 and R16) |
| 35785 | Coil—Loop primary (L1) |
| 35789 | Coil—Oscillator coil |
| 35803 | Coil—Oscillator coils for push button switch |
| 35874 | Condenser—Variable tuning condenser |
| 35860 | Control—Tone control |
| 35859 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35871 | Core—Adjusting core and stud for oscillator coils |
| 35788 | Core—Core and stud for oscillator coil |
| 35870 | Indicator—Station selector indicator |
| 35855 | Loop—Antenna loop complete |
| 35856 | Loop—Antenna loop winding |
| 35872 | Plate—Dial back plate |
| 32289 | Pulley—Drive cord pulley and rivet |
| 30681 | Resistor—470 ohms, 1 watt (R14) |
| 14720 | Resistor—1,000 ohms, ½ watt (R3) |
| 14024 | Resistor—2,700 ohms, ½ watt (R17) |
| 30694 | Resistor—3,900 ohms, ½ watt (R1) |
| 35875 | Resistor—12,000 ohms, 3 watts (R7) |
| 13998 | Resistor—22,000 ohms, ½ watt (R9) |
| 12454 | Resistor—33,000 ohms, ½ watt (R5) |
| 12412 | Resistor—47,000 ohms, ½ watt (R4) |
| 12285 | Resistor—470,000 ohms, ½ watt (R11, R13) |
| 12679 | Resistor—2.2 meg., ½ watt (R2, R8) |
| 13601 | Resistor—10 meg., ½ watt (R12) |
| 35862 | Shaft—Tuning shaft |
| 35772 | Shield—Power transformer bottom shield |
| 35934 | Shield—Power transformer top shield assembly |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono. input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35868 | Switch—Push button switch |
| 35863 | Switch—Range switch |
| 35636 | Transformer—First I-F transformer |
| 35790 | Transformer—Second I-F transformer |
| 35588 | Transformer—Power transformer—110 volts, 25 cycle |
| 35853 | Transformer—Power transformer—less end shields 110 volts, 60 cycle |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-79B1)** |
| 35849 | Cap—Dust cap |
| 35880 | Coil—Field coil |
| 35441 | Cone—Cone complete with voice coil |
| 35879 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35883 | Button—Push button (dark brown) |
| 36299 | Button—Push button (light brown) |
| 35919 | Decalcomania—Control panel decal |
| 35393 | Decalcomania—"Television" decal |
| 35916 | Dial—Glass dial scale |
| 35915 | Escutcheon—Dial scale escutcheon—less dial |
| 35881 | Escutcheon—Push button escutcheon |
| 35814 | Knob—Tone control or range switch knob (dark brown) |
| 36297 | Knob—Tone control or range switch knob (light brown) |
| 35775 | Knob—Tuning or volume control knob (dark brown) |
| 36298 | Knob—Tuning or volume control knob (light brown) |
| 11765 | Lamp—Dial lamp |
| 36149 | Marker—Station selector marker |
| 34053 | Spring—Retaining spring for button Stock No. 35883 |
| 30900 | Spring—Retaining spring for knobs Stock Nos. 35814 and 35775 |

REFER TO PAGE 350C FOR SUPPLEMENTARY INFORMATION

# MODEL 16X-4

## Chassis No. RC-462-C

## Specifications

FREQUENCY RANGE..... ..... 535-1,720 kc

Intermediate Frequency..... 455 kc

LOUDSPEAKER.....5 inch permanent-magnet dynamic

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted..... 0.9 watts Maximum..... 1.4 watts

POWER SUPPLY RATINGS
AC Rating....105-125 volts, direct current, or 50-60 cycles 30 watts

## Alignment Procedure

**Output Meter Alignment.**—If this method is used connect the meter across the voice coil and turn the receiver volume control to maximum.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

**Test Oscillator.**—Connect the low side of the test oscillator to the receiver chassis through a .01 mfd. capacitor. When the electronic voltmeter is used as an alignment indicator the output of the test oscillator should be adjusted to produce several volts of AVC. With the output meter alignment method the oscillator output should be kept as low as possible.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

**Push Button Adjustment:**

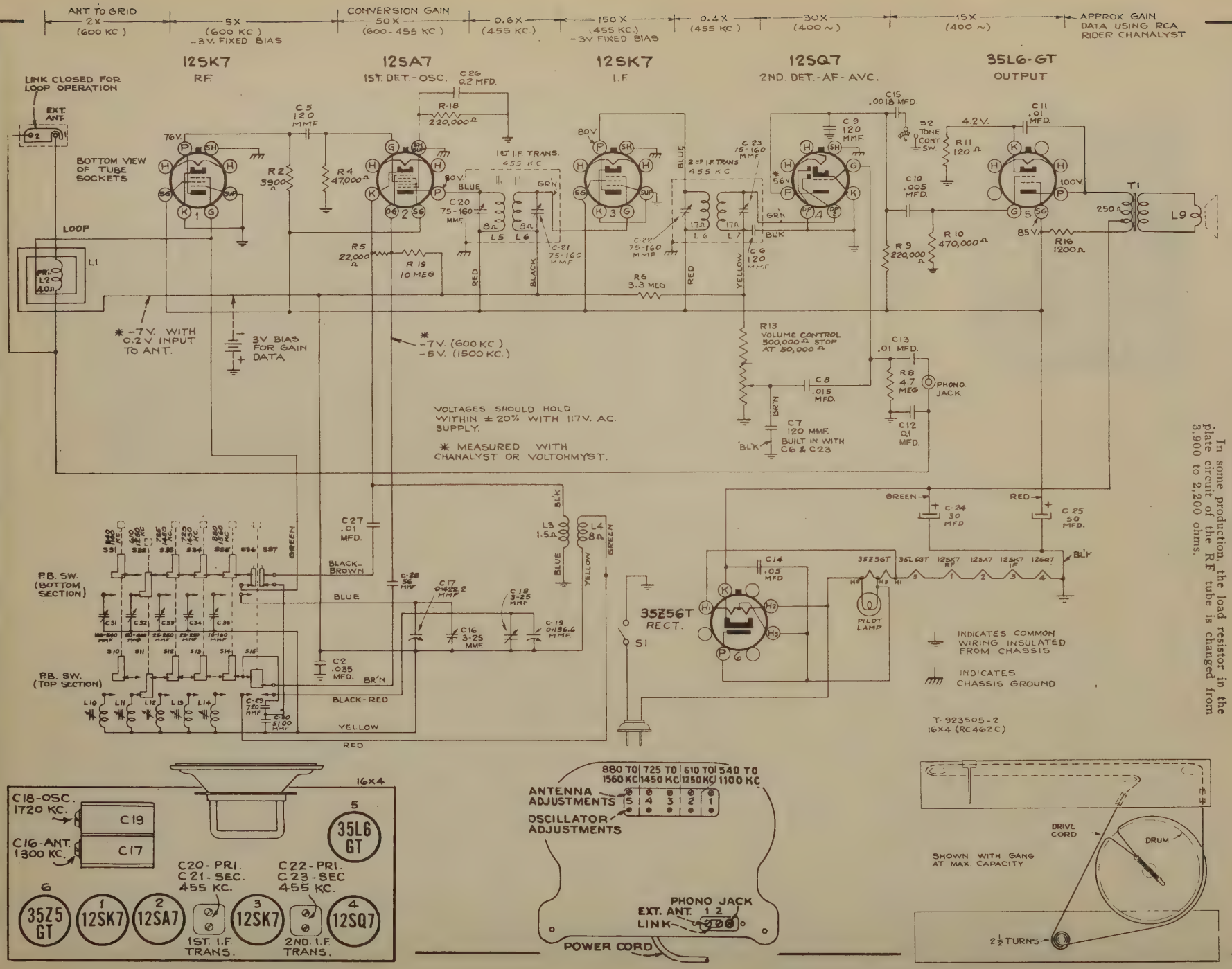
1. Make a list of the six desired stations, arranged in order from low to high frequencies, and manually tune-in the first station on this list.
2. Push in station button No. 1 (extreme left) and adjust No. 1 oscillator core to receive the station.
3. Adjust antenna trimmer for maximum output. Clockwise core and trimmer adjustment tunes circuits to lower frequencies.
4. Adjust for each of the four remaining stations in a similar manner.
5. Make a final careful re-adjustment of oscillator cores and antenna trimmers.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid, in series with 0.1 mfd. | 455 kc | Quiet Point at 1,700 kc end of dial | C23, C22 2nd I-F transformer |
| 2 | 12SA7 1st det. grid, in series with 0.1 mfd. | | | C21, C20 1st I-F transformer |
| 3 | 12SK7 R-F grid, in series with 0.1 mfd. | 1,720 kc | 1,720 kc | C18 (osc.) |
| 4 | Radiation Loop | 1,300 kc | Resonance on signal | C16 (ant.) |
| 5 | Repeat steps 3 and 4 | | | |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-462C)** |
| 36239 | Board—Terminal and receptacle board |
| 36238 | Bracket—Lamp bracket |
| 36871 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd. each, 1 section of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 37509 | Capacitor—56 mmfd. |
| 12724 | Capacitor—120 mmfd. |
| 31435 | Capacitor—750 mmfd. |
| 36679 | Capacitor—5,100 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic comprising 1 section of 30 mfd. 150 volts, and 1 section of 50 mfd. 150 volts |
| 35096 | Coil—Loop primary coil |
| 36872 | Coil—Oscillator coil |
| 35803 | Coil—P.B. oscillator coil |
| 37638 | Coil—P.B. oscillator coil |
| 36226 | Condenser—Variable tuning condenser |
| 36228 | Control—Tone control |
| 36242 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 52-in. overall lg.) |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 36237 | Drum—Drive drum |
| 36236 | Indicator—Station selector indicator |
| 36869 | Loop—Antenna loop complete |
| 36868 | Plate—Dial back plate and pulley assembly complete |
| 36230 | Pulley—Drive cord pulley |
| 30189 | Resistor—120 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 12955 | Resistor—3,900 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 30886 | Screw—No. 8 x ⅜ self-tapping screw for adjusting lamp bracket |
| 36235 | Shaft—Tuning shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36870 | Switch—Selector switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 36800 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES** |
| | SPEAKERS STAMPED "RL-81-A5" or "RL-81-B2" |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| | SPEAKERS STAMPED "92161-1" or "92161-3" |
| 38352 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37115 | Back—Cabinet back |
| 36874 | Button—Push button |
| 36873 | Clamp—Dial clamp |
| 31095 | Cover—Station selector cover |
| 36308 | Dial—Glass dial scale |
| 37831 | Fastener—Set of 4 push fasteners for cabinet back (2 sets required) |
| 36722 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 34610 | Marker—Station selector marker |
| 30900 | Spring—Retaining spring for knob |
| 36875 | Spring—Retaining spring for push button |




**RF Plate Load Resistor:**

In some production, the load resistor in the plate circuit of the RF tube is changed from 3,900 to 2,200 ohms.

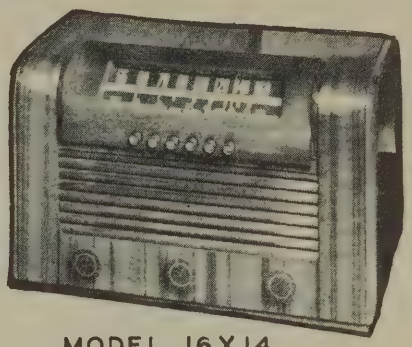
# Models 16X-11, 16X-13, 16X-14, & RADIOLA 515

**Chassis Nos. RC-1000 RC-1000A RC-1000-B RC-1000C**

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver

MODEL 16X11

MODEL 16X13



MODEL 16X14

RADIOLA MODEL 515

## Specifications

FREQUENCY RANGE. { "A" Band..... 535-1,720 kc
"C" Band..... 5.74-19 mc

Intermediate Frequency..... 455 kc

LOUDSPEAKER..... 5-inch permanent-magnet dynamic

POWER SUPPLY RATINGS
AC Rating.. 105-125 volts, direct current, or 50-60 cycles, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted..... 0.9 watts Maximum..... 1.4 watts

**Power Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

## Alignment Procedure

| Steps | Connect the high side of test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid in series with 0.1 mfd. | 455 kc | "A" Band Quiet Point 1,600 kc end of dial | C23, C22 2nd I-F Transformer |
| 2 | 12SA7 1st Det. grid in series with 0.1 mfd. | | | C21, C20 1st I-F Transformer |
| 3 | Ant. terminal in series with 47 mmfd. | 19 mc | "C" Band 19 mc | C18 (osc.) |
| 4 | Radiation Loop | 18 mc | "C" Band Resonance on Signal | C31 (ant.) |
| 5 | Radiation Loop | 6.1 mc | Resonance on Signal | Inductance of L12* |
| 6 | Ant. terminal in series with 200 mmfd. | 1,720 kc | "A" Band 1,720 kc | C35 (osc.) |
| 7 | Radiation Loop | 1,400 kc | "A" Band - Resonance on Signal | C33 (ant.) |
| 8 | Ant. terminal in series with 200 mmfd. | 590 kc | "A" Band 590 kc | C36 (osc.) |
| 9 | Repeat steps 6, 7 and 8 | | | |

* Adjust by dressing proximity of AVC lead to coil.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

## 16X-11, -13, -14

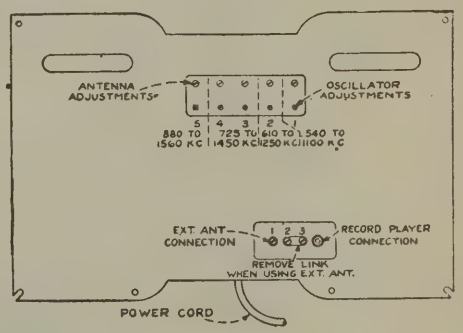
Four different speakers have been used on these models. The replacement parts are listed below:

SPEAKERS STAMPED
"RL-81-A5" or "RL-81-B2"

Stock No.
32907 Cap—Dust cap.....
35570 Cone—Cone complete with voice coil.....

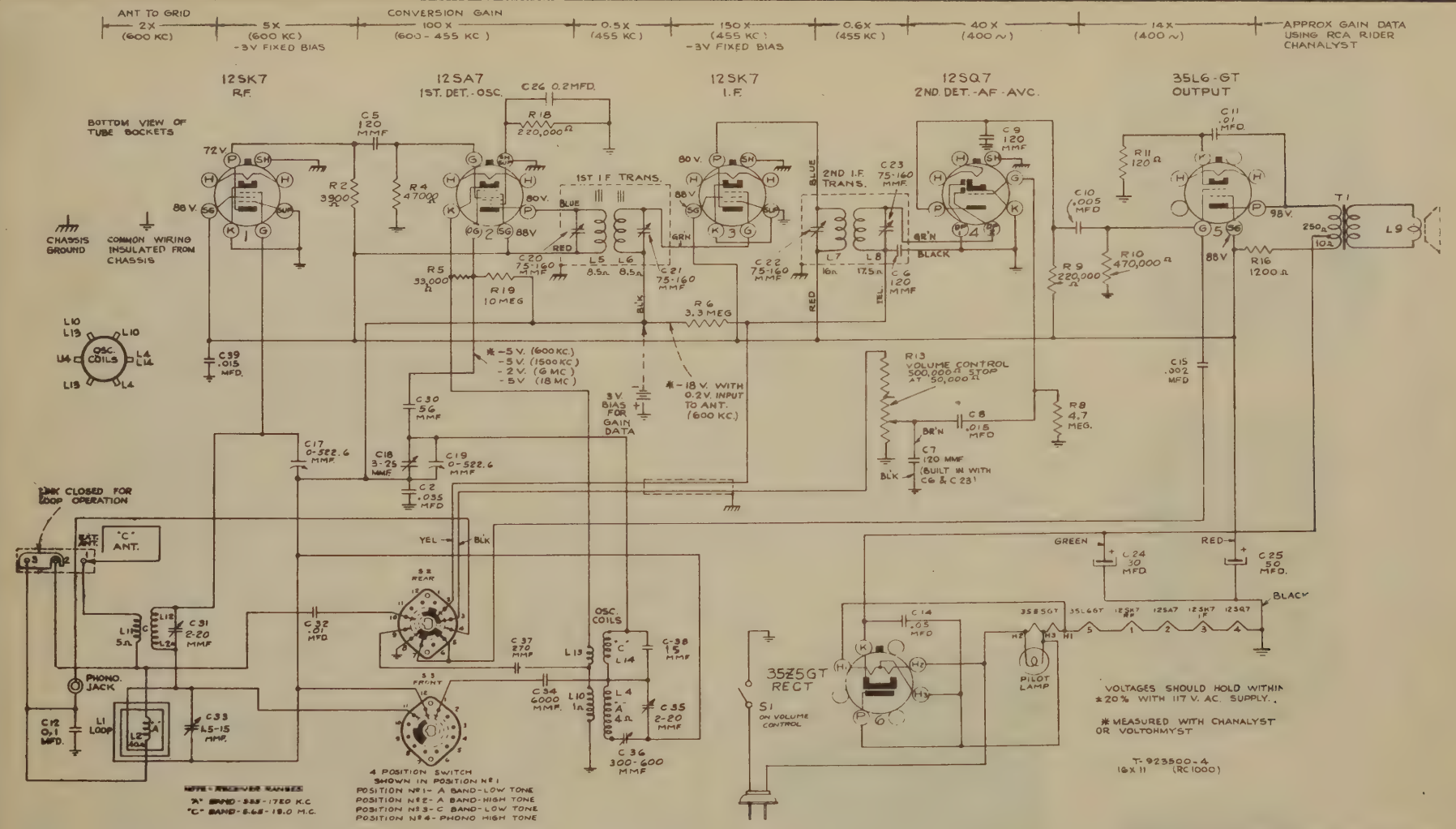
SPEAKERS STAMPED
"92161-1" or "92161-3"
38352 Cone—Cone complete with voice coil .....

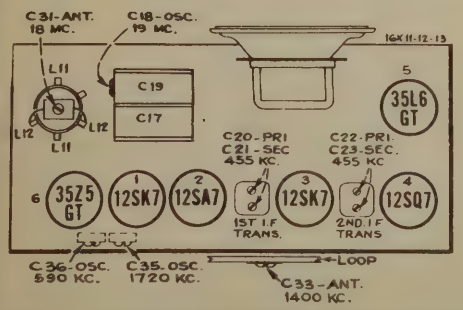
MODEL 16X14 ONLY




**Push Button Adjustment.**—

1. Make a list of the six desired stations, arranged in order from low to high frequencies, and manually tune-in the first station on this list.
2. Push in station button No. 1 (extreme left) and adjust No. 1 oscillator core to receive the station.
3. Adjust antenna trimmer for maximum output. Clockwise core and trimmer adjustment tunes circuits to lower frequencies.
4. Adjust for each of the four remaining stations in a similar manner.
5. Make a final careful re-adjustment of oscillator cores and antenna trimmers.

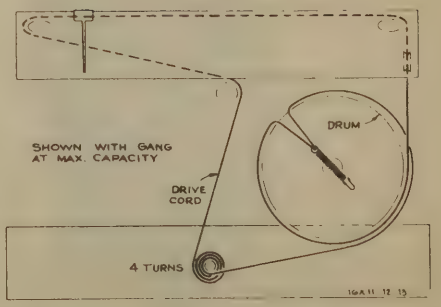

ANT TO GRID
2X (600 KC)
5X (600 KC) -3V FIXED BIAS
CONVERSION GAIN
100 X (600 - 455 KC)
0.5X (455 KC)
150 X (455 KC) -3V FIXED BIAS
0.6X (455 KC)
40 X (400 ~)
14X (400 ~)
APPROX GAIN DATA USING RCA RIDER CHANALYST
12SK7 R.F.
12SA7 1ST. DET. - OSC.
12SK7 I.F.
12SQ7 2ND. DET. - AF - AVC.
35L6-GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
1ST I.F. TRANS.
2ND I.F. TRANS.
CHASSIS GROUND
COMMON WIRING INSULATED FROM CHASSIS
OSC. COILS
R13 VOLUME CONTROL 500,000 Ω STOP AT 50,000 Ω
3V BIAS FOR GAIN DATA
LINK CLOSED FOR LOOP OPERATION
"C" ANT.
PHONO. JACK
L1 LOOP
4 POSITION SWITCH SHOWN IN POSITION NO 1
POSITION NO 1 - A BAND - LOW TONE
POSITION NO 2 - A BAND - HIGH TONE
POSITION NO 3 - C BAND - LOW TONE
POSITION NO 4 - PHONO HIGH TONE
35Z5GT RECT
S1 ON VOLUME CONTROL
PILOT LAMP
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST
T-923500-4 16X11 (RC1000)

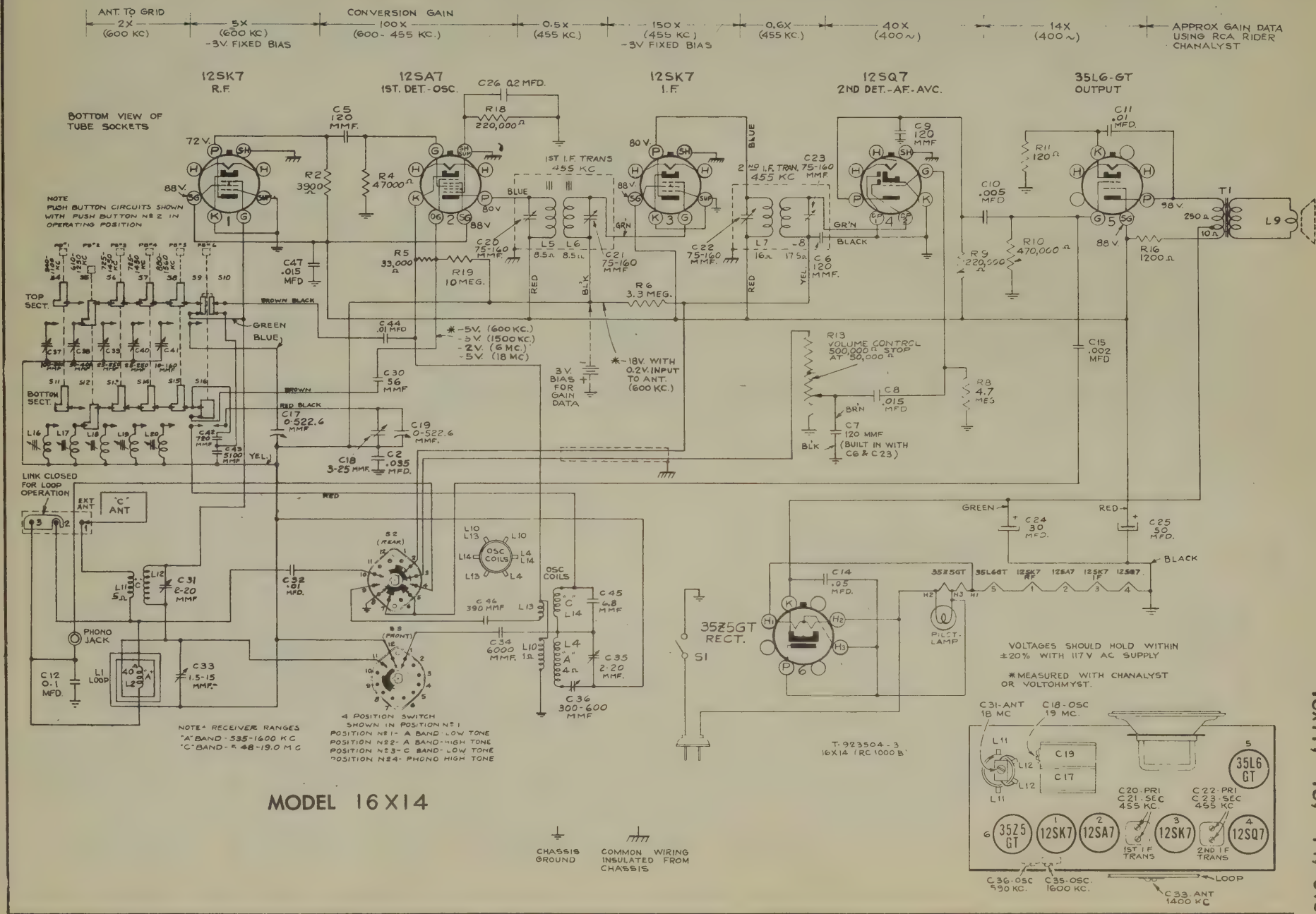



# MODELS 16X11,-13, RAD. 515

**Precautionary Lead Dress.—**

1. Dress all capacitors, leads, etc., coming close to osc. coil rigidly and as far as possible from it.
2. Dress blue lead from loop trimmer against loop and around outside of 35Z5 tube.
3. Dress leads of 120 mmfd. capacitor from terminal board to grid of 12SA7 as short and direct as possible.
4. Dress leads of peaking coil from plate of 12SK7 RF tube to terminal board as short and direct as possible.
5. Dress blue lead from SW ant. coil through same hole in base through which green lead from stator of rear section of the variable condenser passes.




ANT. TO GRID
2X (600 KC)
5X (600 KC) -3V. FIXED BIAS
CONVERSION GAIN
100X (600 - 455 KC.)
0.5X (455 KC.)
150X (455 KC) -3V FIXED BIAS
0.6X (455 KC.)
40X (400~)
14X (400~)
APPROX GAIN DATA USING RCA RIDER CHANALYST
12SK7 R.F.
12SA7 1ST. DET.-OSC.
12SK7 I.F.
12SQ7 2ND DET.-AF.-AVC.
35L6-GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
NOTE PUSH BUTTON CIRCUITS SHOWN WITH PUSH BUTTON NO 2 IN OPERATING POSITION
1ST I.F. TRANS 455 KC
2ND I.F. TRAN. 75-160 MMF. 455 KC
TOP SECT.
BOTTOM SECT.
*-5V. (600 KC.) -5V. (1500 KC.) -2V. (6 MC.) -5V. (18 MC)
*-18V. WITH 0.2V. INPUT TO ANT. (600 KC.)
3V. BIAS FOR GAIN DATA
R13 VOLUME CONTROL 500,000Ω STOP AT 50,000Ω
LINK CLOSED FOR LOOP OPERATION
EXT ANT
"C" ANT
PHONO JACK
L1 LOOP
OSC COILS
4 POSITION SWITCH SHOWN IN POSITION NO 1
POSITION NO 1- A BAND - LOW TONE
POSITION NO 2- A BAND - HIGH TONE
POSITION NO 3- C BAND - LOW TONE
POSITION NO 4- PHONO HIGH TONE
NOTE- RECEIVER RANGES "A" BAND - 535-1600 KC "C" BAND - 48-19.0 MC
35Z5GT RECT.
S1
PILOT LAMP
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V AC SUPPLY
*MEASURED WITH CHANALYST OR VOLTOHMYST.
T-92350A-3 16X14 (RC 1000 B)
C31-ANT 18 MC
C18-OSC 19 MC.
C20-PRI C21-SEC 455 KC.
C22-PRI C23-SEC 455 KC
1ST I.F. TRANS
2ND I.F. TRANS
C36-OSC 590 KC.
C35-OSC 1600 KC.
C33-ANT 1400 KC
LOOP
CHASSIS GROUND
COMMON WIRING INSULATED FROM CHASSIS

# MODEL 16X14

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES**<br>Model 16X11 (RC-1000)<br>Model 16X13 (RC-1000A) |
| 36947 | Board—Ant. and Grd., and Phono input terminal board |
| 36879 | Cap—Second I.F. transformer shield cap |
| 35998 | Capacitor—Mica trimmer for loop |
| 36880 | Capacitor—Mica trimmer, 1 section 2-20 mmfd. and 1 section 300-800 mmfd. |
| 11859 | Capacitor—Adjustable trimmer 3-30 mmfd. |
| 12896 | Capacitor—15 mmfd. — Models 16X11 and 16X13 only |
| 12723 | Capacitor—56 mmfd. |
| 12724 | Capacitor—120 mmfd. |
| 12488 | Capacitor—270 mmfd. — Models 16X11 and 16X13 only |
| 31405 | Capacitor—6,000 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic 1 section of 30 mfd. 150 volts, and 1 section of 50 mfd. 150 volts |
| 35713 | Coil—Antenna coil |
| 35096 | Coil—Loop primary coil |
| 36937 | Coil—Oscillator coil—Models 16X11 and 16X13 only |
| 36876 | Condenser—2-gang variable tuning |
| 36242 | Control—Volume, with power switch |
| 32634 | Cord—Drive cord (approx. 50-in. lg.) |
| 36237 | Drum—Tuning condenser drive cord drum |
| 37068 | Indicator—Station selector indicator |
| 36882 | Loop—Antenna loop complete |
| 36877 | Loop—Loop winding only—less support, primary coil, and trimmer |
| 36229 | Plate—Dial back plate, pulleys and supports |
| 12071 | Resistor—120 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 12955 | Resistor—3,900 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 36897 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36881 | Switch—Tone control switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 36800 | Transformer—Output transformer |
| 33726 | Washer—"C" washer to hold tuning shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36884 | Back—Cabinet back—Model 16X11 only |
| 37803 | Back—Cabinet back less wire—Model 16X13 only |
| 36873 | Clamp—Dial clamp (2 req'd)—Model 16X13 |
| 36890 | Clamp—Dial clamp—left hand—Model 16X11 only |
| 36891 | Clamp—Dial clamp—right hand—Model 16X11 only |
| 31095 | Cover—Push button celluloid covers (1 set) |
| 36888 | Dial—Tuning dial—Model 16X11 and 16X13 only |
| 36153 | Fastener—Push on fastener—Model 16X11 |
| 36886 | Knob—Brown tone switch knob |
| 36722 | Knob—Brown volume, or tuning knob |
| 11765 | Lamp—Dial lamp |
| 34610 | Marker—Station call letter markers |
| 30900 | Spring—Knob retaining spring |
| 36875 | Spring—Push button retaining spring |
| | **CHASSIS ASSEMBLIES**<br>Model 16X14<br>(RC-1000B) |
| 36947 | Board—Ant. and Grd., and Phono input terminal board |
| 36879 | Cap—Second I.F. transformer shield cap |
| 35998 | Capacitor—Mica trimmer for loop |
| 36880 | Capacitor—Mica trimmer, 1 section 2-20 mmfd. and 1 section 300-800 mmfd. |
| 11859 | Capacitor—Adjustable trimmer 3-30 mmfd. |
| 14079 | Capacitor—6.8 mmfd. |
| 36871 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd. and 1 section of 100-540 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 12724 | Capacitor—120 mmfd. |
| 13894 | Capacitor—390 mmfd. |
| 31435 | Capacitor—750 mmfd. |
| 36679 | Capacitor—5,100 mmfd. |
| 31405 | Capacitor—6,000 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 36301 | Capacitor—Electrolytic 1 section of 30 mfd. 150 volts, and 1 section of 50 mfd. 150 volts |
| 36939 | Coil—Antenna coil |
| 35096 | Coil—Loop primary coil |
| 36938 | Coil—Oscillator coil |
| 37638 | Coil—P.B. oscillator coil (1 used) |
| 35803 | Coil—P.B. oscillator coil (4 used) |
| 36876 | Condenser—2 gang variable tuning |
| 36242 | Control—Volume, with power switch |
| 34662 | Cord—Drive cord (approx. 52 in. lg.) |
| 35871 | Core—Adjusting core and stud for P.B. oscillator coils |
| 36237 | Drum—Tuning condenser drive cord drum |
| 37068 | Indicator—Station selector indicator |
| 36883 | Loop—Antenna loop complete |
| 36878 | Loop—Loop winding only—less support, primary coil, and trimmer |
| 36868 | Plate—Dial back plate, pulleys, and supports |
| 30189 | Resistor—120 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 12955 | Resistor—3,900 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 36897 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36870 | Switch—Selector switch |
| 36881 | Switch—Tone control switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 36800 | Transformer—Output transformer |
| 33726 | Washer—"C" washer to hold tuning shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37802 | Back—Cabinet back less wire |
| 36874 | Button—Push button |
| 36873 | Clamp—Dial clamp (2 required) |
| 31095 | Cover—Push button celluloid covers (1 set) |
| 36889 | Dial—Tuning dial |
| 36886 | Knob—Brown tone switch knob |
| 36722 | Knob—Brown volume, or tuning knob |
| 11765 | Lamp—Dial lamp |
| 34610 | Marker—Station call letter markers |
| 30900 | Spring—Knob retaining spring |
| 36875 | Spring—Push button retaining spring |
| | **RADIOLA 515** |
| | Same as 16 X 11 & 16 X 13 |
| | **EXCEPT** |
| | **CHASSIS ASSEMBLIES**<br>**(RC-1000C)** |
| 37928 | Plate—Dial back plate complete |
| 36230 | Pulley—Drive cord pulley |
| 30189 | Resistor—120 ohms, ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| | **SPEAKER ASSEMBLIES**<br>**(RL-81B2)** |
| 35570 | Cone—Cone complete with voice coil |
| 37612 | Speaker—5-inch permanent magnet speaker complete with cone and voice coil—less output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36302 | Back—Cabinet back—less red lead wire and terminal |
| 36873 | Clamp—Dial clamp |
| 37929 | Dial—Glass dial scale |
| 37831 | Fastener—Push-on fastener |
| 37386 | Knob—Range switch knob |
| 36541 | Knob—Tuning or volume control knob |
| 11765 | Lamp—Dial lamp, Mazda No. 51 |
| 11349 | Spring—Retaining rings for knobs |

# MODELS Q16 and Q16 E

**Chassis No. RC-561** **RC-561-C**

## Five-Tube, Five-Band, A-C, Superheterodyne Receiver

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band).. 540-1,720 kc (556-174 m)
Medium Wave ("B" Band)..... 3.0-9.5 mc (100-31.6 m)
"31" Meter Spread Band..... 9.5-11.7 mc (31.6-25.6 m)
"25" Meter Spread Band..... 11.7-15.1 mc (25.6-19.9 m)
"19-13" Meter Spread Band... 15.1-22.5 mc (19.9-13.3 m)

INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

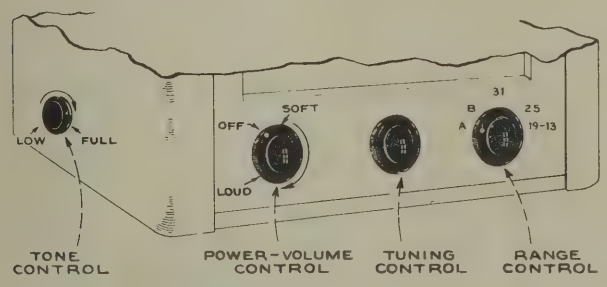
(1) RCA-6SA7..... 1st Detector-Oscillator
(2) RCA-6SK7..... I-F Amplifier
(3) RCA-6SQ7..... 2nd Detector, A-F Amplifier, A.V.C.
(4) RCA-6F6-G..... Power Output
(5) RCA-5Y3-G..... Rectifier

LOUDSPEAKER (RL-92-A1)*

Type..... 6-inch permanent magnet dynamic
V.C. Impedance at 400 Cycles..... 3.4 ohms

POWER SUPPLY RATINGS

| | Voltages | Frequency (cycles) | Watts |
|---|---|---|---|
| (1) | 105-125 | 50-60 | 50 |
| (2) | 105-125 | 25-60 | 50 |
| (3) | 105-125, 200-250 | 50-60 | 50 |




*Controls*

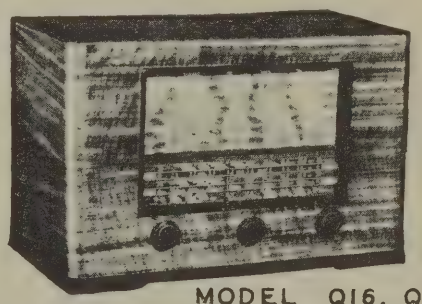
**Record Player Attachment.**—A jack is provided on the rear of chassis for connection to a Record Player Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

POWER OUTPUT

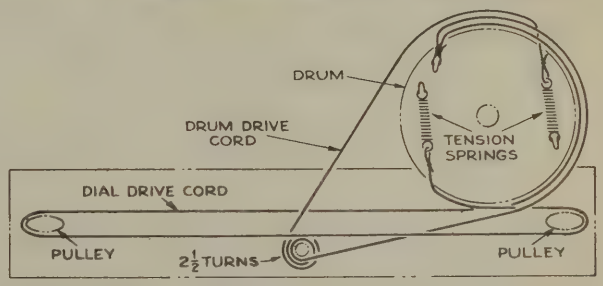
Undistorted..... 1.8 watts
Maximum..... 3.25 watts

| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS (inches) | 11⅛ | 17⅛ | 8¾ |
| Chassis Base Dimensions (inches) | 2¾ | 15⅛ | 5¼ |

Overall Chassis Height..... 6¾ inches
Weight (net)..... 18 pounds
Tuning Drive Ratio..... 24 to 1



MODEL Q16, Q16E




*Dial-Indicator and Drive Mechanism*

**Precautionary Lead Dress.—**

1. All leads between antenna coils and switch must be as short as possible, bunched together, and kept away from oscillator coils, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.

## Q16E (RC-561-C)

**Service Data:**

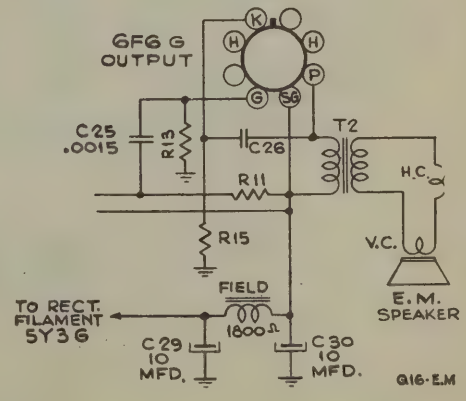
Model Q16E is similar to Model Q16, except that it has an EM speaker, as shown in accompanying sketch, and the following parts are different:

| Stock No. | Description |
|---|---|
| 12896 | Capacitor—15 mmfd., moulded mica |
| 33806 | Capacitor—.0015 mfd. |
| 32342 | Capacitor—Electrolytic, comprising 2 sections of 10 mfd., 450 volts each |
| 38409 | Control—Tone control |
| 34761 | Resistor—10 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 30652 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 32911 | Transformer—Power transformer—105-120 volts, 50-60 cycle |
| 32852 | Transformer—Power transformer—110-220 volts, 50-60 cycle |
| 2917 | Washer—"C" washer to hold tuning shaft |

* SPEAKER ASSEMBLIES (RL-79C-1)

| | |
|---|---|
| 31825 | Cap—Dust cap |
| 32903 | Coil—Field coil—1,800 ohms |
| 38392 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 32905 | Transformer—Output transformer |

Note.—If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required.




*Speaker connections in Model Q16E (RC-561-C).*

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.** — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band dials. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

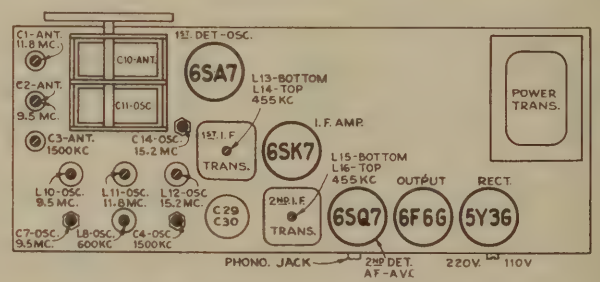
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | A | Quiet Point at high-frequency end | L15 and L16 2nd I-F Trans. |
| 2 | 1st Det. grid in series with .01 mfd. | | | | L13 and L14 1st I-F Trans. |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L11 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C14 (osc.)* |
| 5 | | Repeat steps 3 and 4 | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L12 (osc.)** |
| 7 | | 9.5 mc | 31M | 156° | L10 (osc.)** C2 (ant.) |
| 8 | | 9.5 mc | *B | 11.5° | C7 (osc.)*** |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C4 (osc.) C3 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | | Repeat steps 9 and 10 | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that **C14** has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

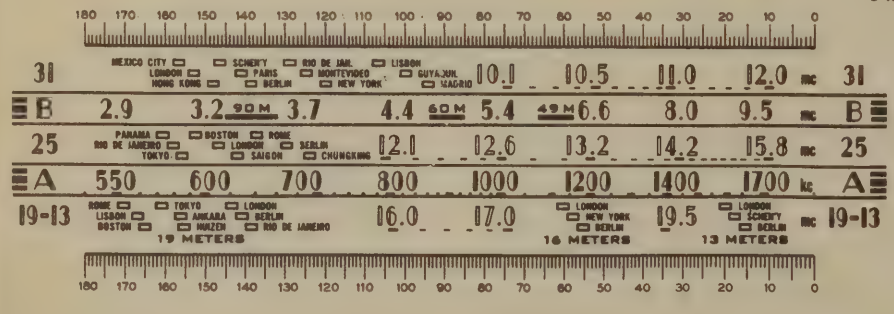
**Peak at minimum position of plunger if two peaks can be obtained.

***Peak at minimum capacity if two peaks can be obtained.

**NOTE:** Oscillator tracks above signal on all bands.



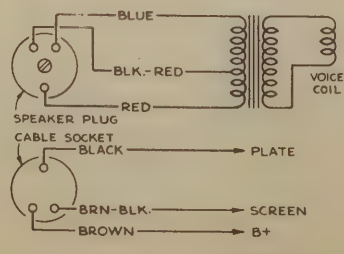

*Tube and Trimmer Location*



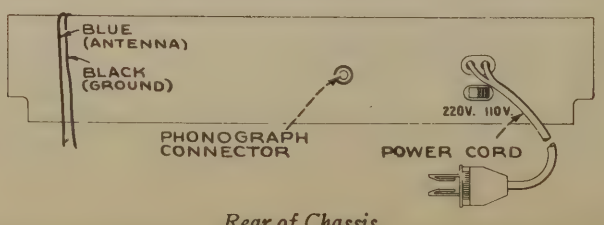

## Calibration Scale

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

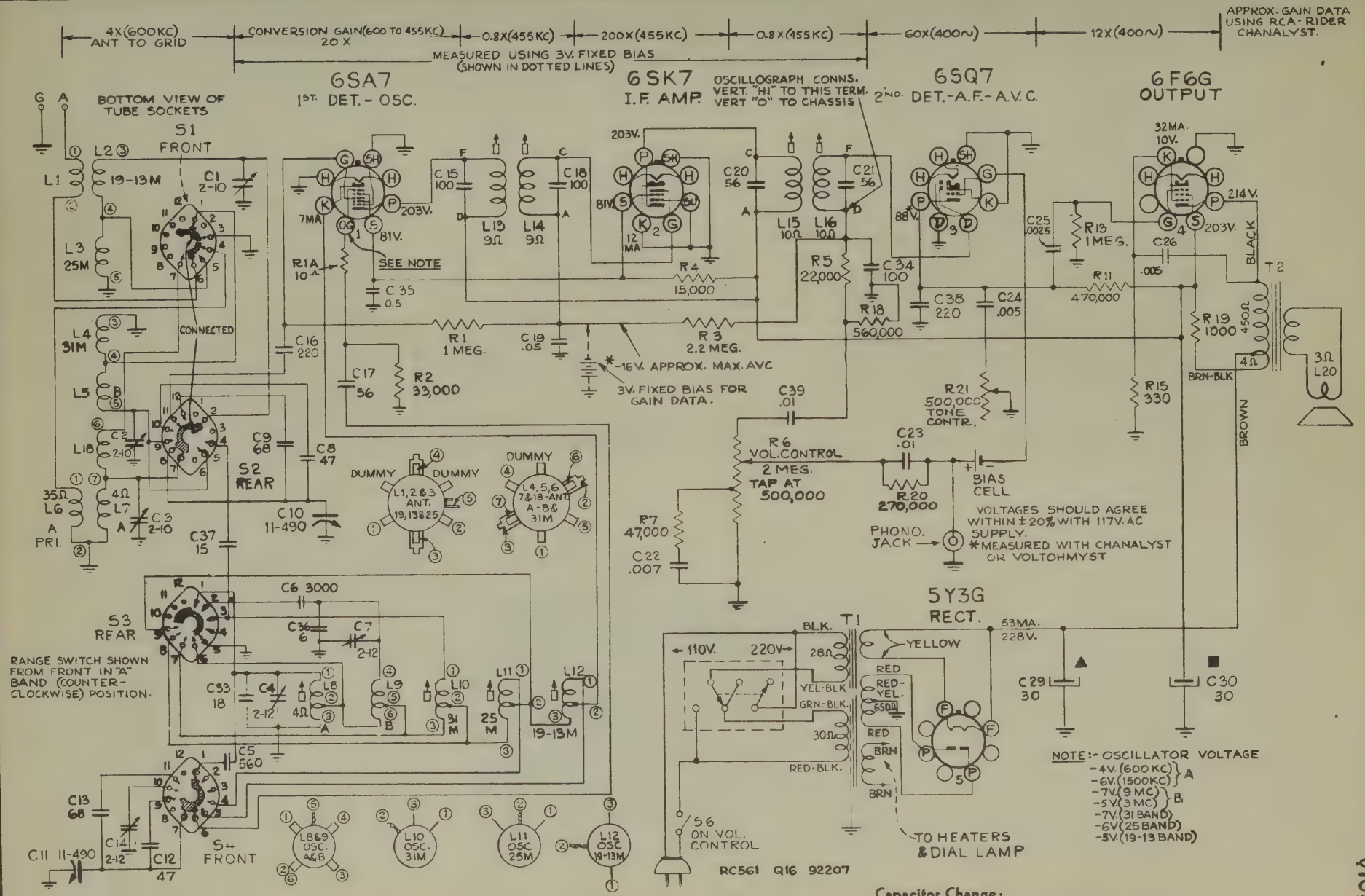
The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 150° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."




*Connections and Colors of Loudspeaker and Cable*




*Rear of Chassis*




Contacts 2, 3 and 4 on switch S3 are connected to contacts 2, 3 and 4 on switch S4.

*Schematic Circuit Diagram*

**Capacitor Change:**

To reduce flutter in Q16 with "EM" speaker, the audio coupling capacitor C25 is changed from .0025 to .0015 mfd.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** Model Q16 (RC-561) |
| 37981 | Bracket—Drive cord pulley and bracket |
| 37976 | Bracket—Tone control support bracket |
| 35642 | Calibrator—Drive drum calibrator dial |
| 34654 | Capacitor—Mica trimmer comprising 3 sections of 2.5-10 mmfd. |
| 12714 | Capacitor—Air trimmer—2-12 mmfd. |
| 35646 | Capacitor—6 mmfd. |
| 36012 | Capacitor—15 mmfd., ceramic (C37) |
| 12722 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic (C12) |
| 13141 | Capacitor—47 mmfd., silvered mica (C8) |
| 30949 | Capacitor—56 mmfd., mica (IF) |
| 12723 | Capacitor—56 mmfd., moulded mica |
| 35645 | Capacitor—68 mmfd., ceramic (C13) |
| 13057 | Capacitor—68 mmfd., silvered mica (C9) |
| 30904 | Capacitor—100 mmfd., mica (IF) |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 31701 | Capacitor—0.5 mfd. |
| 18975 | Capacitor—Electrolytic comprising 2 sections of 30 mfd. 300 volts |
| 31581 | Cell—Bias cell |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—"A" and "B" band |
| 35624 | Coil—Oscillator coil—"19-13 meter" band |
| 35625 | Coil—Oscillator coil—"25 meter" band |
| 35626 | Coil—Oscillator coil—"31 meter" band |
| 35619 | Condenser—Two gang variable tuning condenser |
| 37977 | Control—Tone control |
| 37980 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord—(approx. 27 in. overall lgth.) |
| 34662 | Cord—Pointer cord (approx. 43 in. overall lgth.) |
| 35788 | Core—Adjustable core and stud for "A" and "B" band oscillator coil |
| 31259 | Core—Adjustable core and stud for "19-13 meter", "25 meter" and "31 meter" oscillator coils |
| 35627 | Drum—Tuning condenser drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 31580 | Holder—Bias cell holder |
| 33825 | Plug—2 prong male plug for power input |
| 5119 | Plug—3 contact female socket for speaker cable |
| 36627 | Pulley—Drive cord pulley |
| 13988 | Resistor—10 ohms, ½ watt |
| 11670 | Resistor—330 ohms, 1 watt |
| 30152 | Resistor—1,000 ohms, 1 watt |
| 3358 | Resistor—3,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watts |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drive drum |
| 37979 | Shaft—Tuning knob shaft |
| 35772 | Shield—Bottom shield for power transformers—Stock Nos. 35757 and No. 35758 |
| 35709 | Shield—Top shield for power transformers—Stock Nos. 35757 and No. 35758 |
| 31364 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Pointer cord or drive cord spring |
| 31261 | Spring—Retaining spring for adjustable core and stud assemblies |
| 35622 | Support—Flywheel and shaft support bracket |
| 37978 | Switch—Range switch |
| 32827 | Switch—Voltage change switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 35758 | Transformer—Power transformer—105-120 volts, 25 cycle—less end shields |
| 35757 | Transformer—Power transformer—105-120 volts, 50-60 cycle—less end shields |
| 35759 | Transformer—Power transformer—110-125-150-210-240 volts, 50-60 cycles |
| 2917 | Washer—"C" washer to hold tuning shaft |
| | **SPEAKER ASSEMBLIES** (RL-92-A1) Model Q16 |
| 32907 | Cap—Dust cap |
| 36077 | Cone—Cone complete with voice coil |
| 5118 | Plug—3 prong male plug for speaker |
| 37984 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36103 | Decalcomania—"Off-Volume" decal |
| 37839 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 37986 | Dial—Glass dial scale |
| 37989 | Indicator—Station selector indicator |
| 35814 | Knob—Range switch or volume control knob |
| 35650 | Knob—Tone control knob |
| 35775 | Knob—Tuning knob |
| 11891 | Lamp—Dial lamp |
| 35653 | Mounting—Complete set of hardware to mount 1 speaker |
| 36793 | Rail—Pointer guide rail |
| 14270 | Spring—Retaining spring for knob Stock No. 35650 |
| 30900 | Spring—Retaining spring for knobs Stock Nos. 35814 and 35775 |

**Capacitor C33:**

C33 is changed from 18 to 15 mmfd., Stock No. 12896.

# MODEL 17K

## Chassis No. RC-512

## Seven-Tube, Three-Band, AC, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,600 kc |
| Medium Wave | 1.5-4.0 mc |
| Short Wave | 5.8-18.0 mc |
| INTERMEDIATE FREQUENCY | 455 kc |

PUSH-BUTTON RANGES

| | |
|---|---|
| One station between approximately | 540-1,030 kc |
| Two stations between approximately | 610-1,250 kc |
| Two stations between approximately | 740-1,430 kc |
| One station between approximately | 880-1,550 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6H6 | 2nd Detector, A.V.C. |
| (5) RCA-6SF5 | A-F Amplifier |
| (6) RCA-6K6GT | Power Output |
| (7) RCA-5Y3-G | Rectifier |

PILOT LAMPS

(2)... Mazda No. 51, 6.3 volts, 0.20 amp.

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

LOUDSPEAKER (RL-70-L5)

| | |
|---|---|
| Type | 12-inch Electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

POWER SUPPLY RATINGS

105-125 volts, 50-60 cycles, 90 watts
105-125 volts, 25-60 cycles, 90 watts

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 39 | 26 | 13 |
| Chassis Base Dimensions (inches) | 2½ | 16 | 6¾ |
| Overall Chassis Height | 9½ | | |
| Tuning Drive Ratio | 15-1 | | |

## Push Button Adjustment

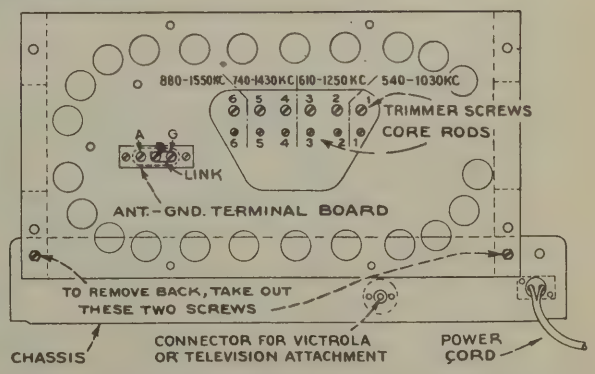
The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-14) to receive the station.
4. After oscillator core is set correctly, adjust C-8 for maximum output.
   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Owing to the relatively high r-f gain, it may be found that a given station can be tuned in at several different settings of the magnetite-core oscillator push-button coils. In such cases, it is advisable to unscrew the loop push-button trimmers to minimum capacity before adjusting the magnetite cores.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L-9 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this coee in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.



# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.** — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration for Alignment.**—The proper dial calibration for alignment purposes can be set up in two ways:

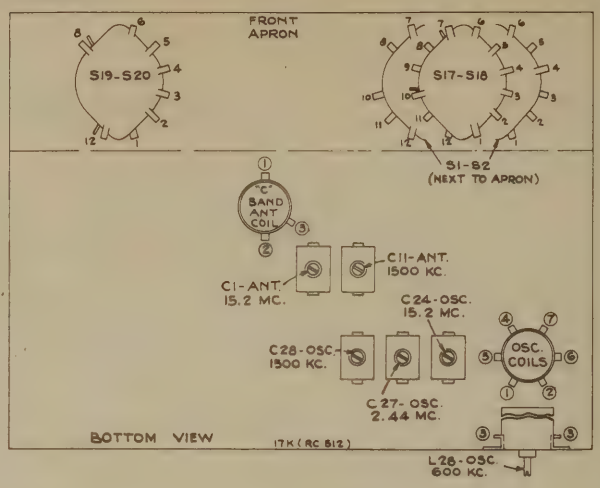
1. The dial may be removed from the cabinet by sliding out the two spring pieces which clamp it in its mounting position. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial slipped under the pointer so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced including the fibre light shields which are folded under the ends of the glass scale.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

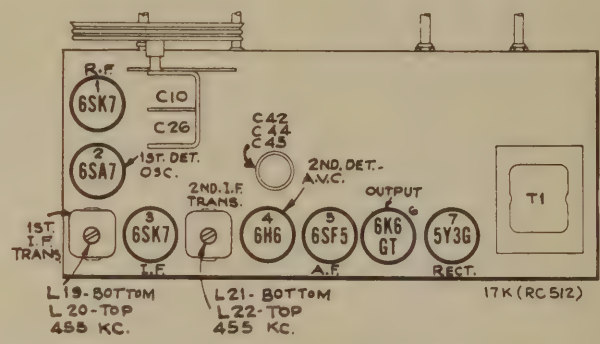
**Pointer for Calibration Scale.**—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.

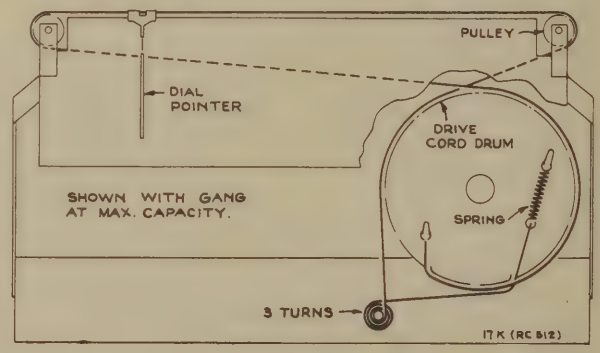
| Steps | Connect high side of test oscillator to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with 0.01 mfd. | 455 kc | "A" band Quiet Point between 550 and 750 kc | L-21 and L-22 (2nd I-F Trans.) |
| 2 | 6SA7 grid in series with 0.01 mfd. | | | L-19 and L-20 (1st I-F Trans.) |
| 3 | Antenna terminal in series with 47 mmfd. | 15.2 mc | 15.2 mc (149°) "C" band | C-24 (Osc.)* C-1 (R-F) Rock gang |
| 4 | Antenna terminal in series with 200 mmf. (link open) | 2.44 mc | 2.44 mc (97°) "B" band | C-27 (Osc.) |
| 5 | Antenna terminal in series with 200 mmf. | 600 kc | 600 kc (30.5°) "A" band | L-28 (Rock in) |
| 6 | Antenna terminal in series with 200 mmf. | 1,500 kc | 1,500 kc (158°) "A" band | C-28 (Osc.) C-11 (R-F) |
| 7 | Repeat steps 5 and 6. | | | |

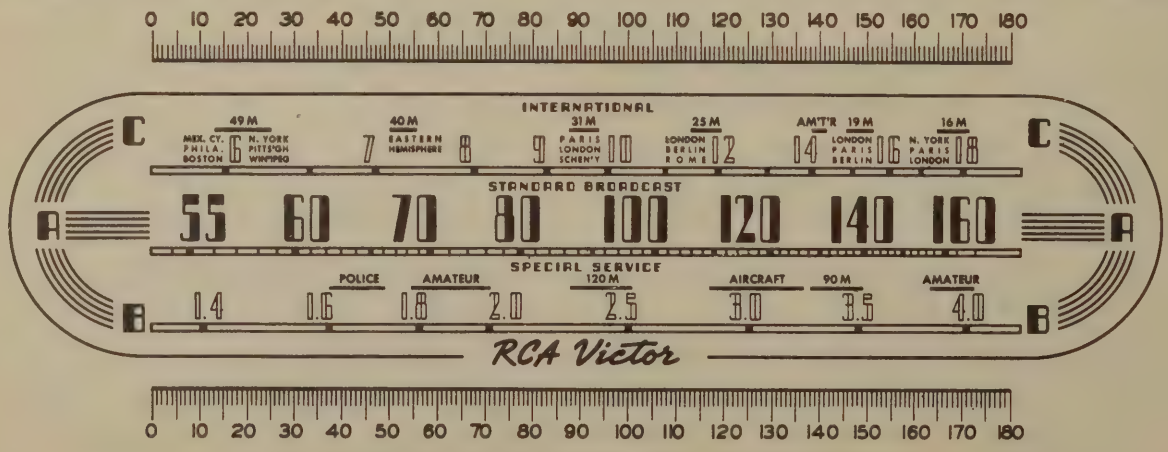
* Use minimum capacity peak if two can be obtained. Check to determine that C-24 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

Note.—Oscillator tracks above signal on all bands.



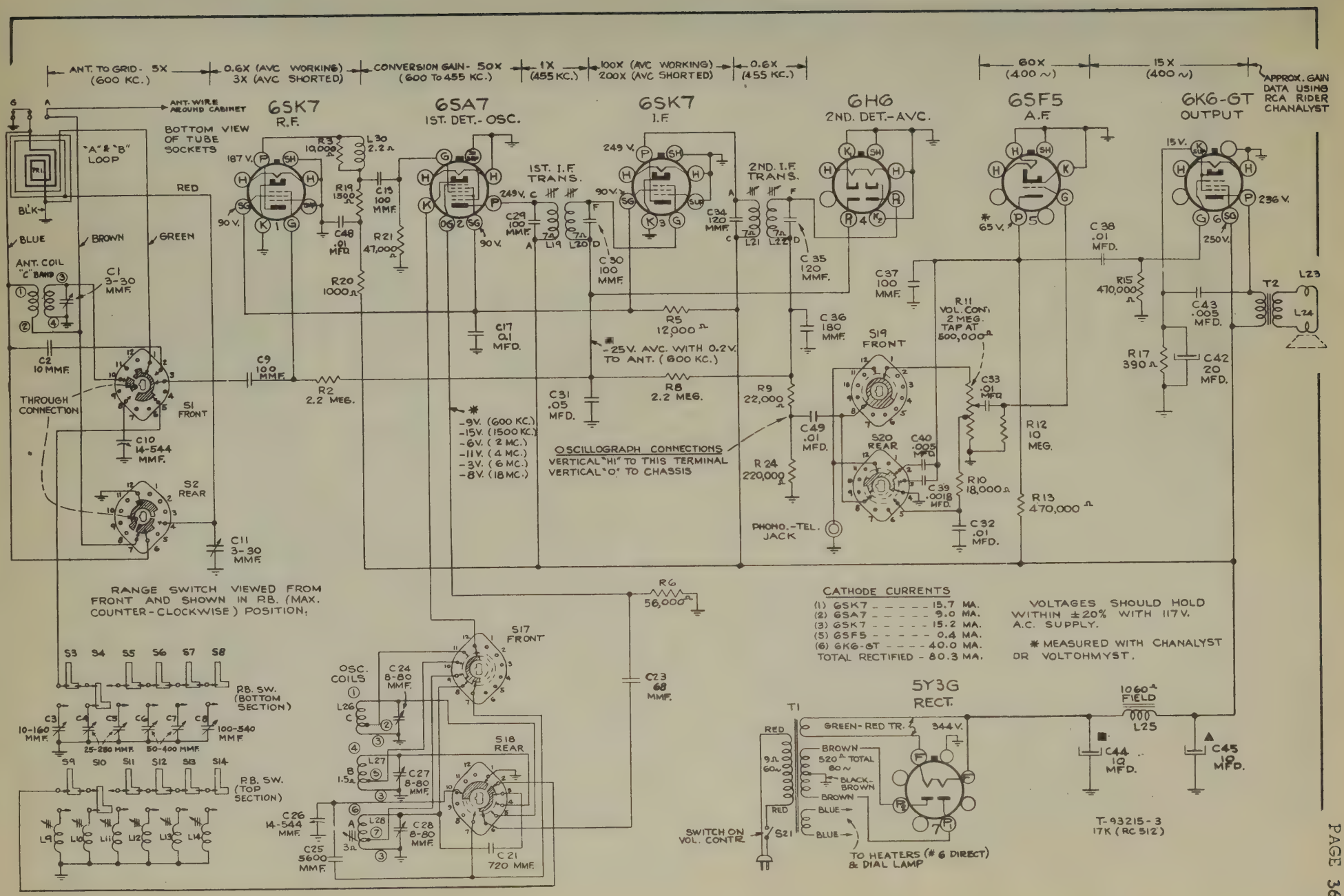




*Receiver Dial Scales, and Corresponding Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 30.5° on the calibration scale corresponds to 600 kc on "A" band. Read instructions under "Alignment Procedure."

For correct dial calibration, the pointer should fall on the scratch mark on the dial backing plate with condenser fully meshed. This scratch is 3½ inches from the left extremity of the plate.


ANT. TO GRID - 5X (600 KC.)
0.6X (AVC WORKING) 3X (AVC SHORTED)
CONVERSION GAIN - 50X (600 TO 455 KC.)
1X (455 KC.)
100X (AVC WORKING) 200X (AVC SHORTED)
0.6X (455 KC.)
60X (400 ~)
15X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6SK7 R.F.
6SA7 1ST. DET.-OSC.
6SK7 I.F.
6H6 2ND. DET.-AVC.
6SF5 A.F.
6K6-GT OUTPUT
ANT. WIRE AROUND CABINET
BOTTOM VIEW OF TUBE SOCKETS
"A" & "B" LOOP
ANT. COIL "C" BAND
BLK
BLUE
BROWN
GREEN
RED
C1 3-30 MMF.
C2 10 MMF.
C9 100 MMF.
R2 2.2 MEG.
S1 FRONT
S2 REAR
C10 14-544 MMF.
C11 3-30 MMF.
THROUGH CONNECTION
R3 10,000Ω
L30 2.2Ω
R19 1500Ω
C13 100 MMF.
C48 .01 MFD.
R21 47,000Ω
R20 1000Ω
187 V.
90 V.
249 V.
IST. I.F. TRANS.
C29 100 MMF.
L19
L20
C30 100 MMF.
2ND. I.F. TRANS.
C34 120 MMF.
L21
L22
C35 120 MMF.
C17 .01 MFD.
R5 12,000Ω
-25V. AVC WITH 0.2V. TO ANT. (600 KC.)
C31 .05 MFD.
R8 2.2 MEG.
-9V. (600 KC.)
-15V. (1500 KC.)
-6V. (2 MC.)
-11V. (4 MC.)
-3V. (6 MC.)
-8V. (18 MC.)
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS
R9 22,000Ω
R24 220,000Ω
C49 .01 MFD.
PHONO.-TEL. JACK
S19 FRONT
S20 REAR
R11 VOL. CONT. 2 MEG. TAP AT 500,000Ω
C33 .01 MFD.
C40 .005 MFD.
C39 .0018 MFD.
R10 18,000Ω
R12 10 MEG.
R13 470,000Ω
C32 .01 MFD.
65 V.
C38 .01 MFD.
C37 100 MMF.
R15 470,000Ω
R17 390Ω
C43 .005 MFD.
C42 20 MFD.
15 V.
236 V.
250 V.
T2
L23
L24
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN RB. (MAX. COUNTER-CLOCKWISE) POSITION.
S3 S4 S5 S6 S7 S8
RB. SW. (BOTTOM SECTION)
C3 10-160 MMF.
C4 25-250 MMF.
C5
C6 50-400 MMF.
C7
C8 100-540 MMF.
S9 S10 S11 S12 S13 S14
RB. SW. (TOP SECTION)
L9
L10
L11
L12
L13
L14
S17 FRONT
S18 REAR
OSC. COILS
C24 8-80 MMF.
L26
L27
C27 8-80 MMF.
C26 14-544 MMF.
L28
C28 8-80 MMF.
C25 5600 MMF.
C21 720 MMF.
R6 56,000Ω
C23 68 MMF.
CATHODE CURRENTS
(1) 6SK7 - - - - - 15.7 MA.
(2) 6SA7 - - - - - 9.0 MA.
(3) 6SK7 - - - - - 15.2 MA.
(5) 6SF5 - - - - - 0.4 MA.
(6) 6K6-GT - - - - 40.0 MA.
TOTAL RECTIFIED - 80.3 MA.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. A.C. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
5Y3G RECT.
T1
RED
GREEN-RED TR.
344 V.
BROWN
520Ω TOTAL
60 ~
BLACK-BROWN
BROWN
RED
BLUE
BLUE
9Ω 60~
SWITCH ON VOL. CONTR.
S21
TO HEATERS (# 6 DIRECT) & DIAL LAMP
1060Ω FIELD
L25
C44 10 MFD.
C45 18 MFD.
T-93215-3
17K (RC 512)

### Failure to Oscillate on Push-Button Tuning:

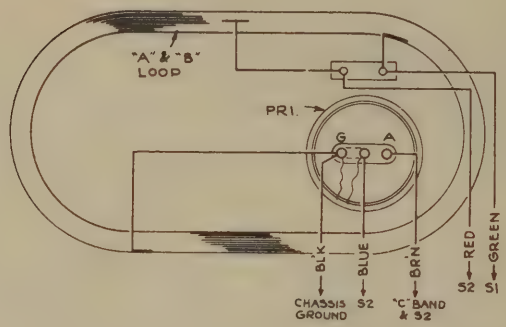
Should a case of non-oscillation on any push-button range be experienced, check the oscillator grid leak to assure that it is 56,000 ohms. Some sets employed a 33,000 ohm leak which was occasionally found troublesome with low line voltage.

### Low-Frequency Oscillator Push-Button Coil:

To ensure low-frequency coverage on the push-button oscillator coils in these models, a high-inductance coil, Stock No. 37133, is used for the 540-1,030 kc push-button oscillator ranges.

### Increasing Sensitivity:

These models have an untuned R-F stage which is resistance-coupled to the 1st-detector. The sensitivity may be increased by changing the R-F plate load resistor to a higher value, between 6,000 and 10,000 ohms. This change is not recommended in metropolitan localities owing to possiblity of cross-modulation.




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-512)** |
| 34025 | Board—"Antenna-Ground" board |
| 35795 | Calibrator—Drive drum calibrator |
| 35792 | Capacitor—Trimmer comprising 2 sections of 3-30 mmfd. each |
| 35791 | Capacitor—Mica trimmer comprising 3 sections of 8-80 mmfd. each |
| 13200 | Capacitor—10 mmfd. |
| 35804 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 35877 | Capacitor—720 mmfd |
| 13895 | Capacitor—5,600 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 35858 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 400 volts each and 1 section of 20 mfd., 25 volts |
| 35965 | Coil—Antenna coil—"C" band |
| 35876 | Coil—Coil and resistor assembly |
| 36031 | Coil—Loop loading coil |
| 35789 | Coil—Oscillator coil |
| 35803 | Coil—Push button switch oscillator coil |
| 35960 | Condenser—Variable tuning condenser |
| 36249 | Control—Tone control |
| 36250 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord |
| 35788 | Core—Adjusting core and stud for oscillator coil |
| 35871 | Core—Adjusting core and stud for push button oscillator coils |
| 35794 | Drum—Tuning condenser drive drum—less calibrator |
| 38784 | Frame—Dial frame complete with lamp bracket and pulleys—less dial |
| 35798 | Indicator—Station selector indicator and carriage |
| 36029 | Loop—Antenna loop complete |
| 36030 | Loop—Loop winding only |
| 36009 | Plug—2-contact male plug for loop cable |
| 5119 | Plug—3-contact female plug for speaker cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 35787 | Plug—Phono. input plug |
| 35973 | Pulley—Drive cord pulley |
| 30498 | Resistor—390 ohms, ½ watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 30654 | Resistor—1,500 ohms, ½ watt |
| 35876 | Resistor—10,000 ohms |
| 35875 | Resistor—12,000 ohms, 3 watts |
| 13045 | Resistor—18,000 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35797 | Shaft—Tuning shaft and pulley |
| 35772 | Shield—Bottom end shield for power transformer |
| 35709 | Shield—Top end shield for power transformer |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36025 | Switch—Push button selector switch |
| 36024 | Switch—Range switch |
| 35636 | Transformer—First I-F transformer |
| 35790 | Transformer—Second I-F transformer |
| 35588 | Transformer—Power transformer—110 volts, 25 cycle |
| 35959 | Transformer—Power transformer—110 volts, 60 cycle—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-70L5)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil—1,060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male speaker plug |
| 31301 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36027 | Bezel—Push button bezel—less buttons |
| 35883 | Button—Push button—dark brown |
| 36299 | Button—Push button—light brown |
| 35914 | Decalcomania—Control panel decal |
| 36028 | Dial—Glass dial scale |
| 36026 | Escutcheon—Dial scale escutcheon—less dial |
| 35814 | Knob—Range switch or tone control knob—dark brown |
| 36297 | Knob—Range switch or tone control knob—light brown |
| 35775 | Knob—Tuning or volume control knob—dark brown |
| 36298 | Knob—Tuning or volume control knob—light brown |
| 11765 | Lamp—Dial lamp |
| 36149 | Marker—Push button station marker |
| 36007 | Mounting—Antenna loop mounting hardware |
| 33774 | Mounting—Speaker mounting hardware comprising 1 eyelet and 1 grommet |
| 34053 | Spring—Retaining spring for button Stock No. 35883 and 36299 |
| 30900 | Spring—Retaining spring for knob Stock No. 35775, 35814, 36297, 36298 |

# MODEL Q17

## Chassis No. RC-561A

## Five-Tube, Five-Band, AC-DC, Superheterodyne Receiver

**REFER TO MODEL Q16 FOR ALIGNMENT PROCEDURE**

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band).. 540-1,720 kc (556-174 m)
Medium Wave ("B" Band)..... 3.0-9.5 mc (100-31.6 m)
"31" Meter Spread Band..... 9.5-11.7 mc (31.6-25.6 m)
"25" Meter Spread Band..... 11.7-15.1 mc (25.6-19.9 m)
"19-13" Meter Spread Band... 15.1-22.5 mc (19.9-13,3 m)

INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7..... 1st Detector-Oscillator
(2) RCA-12SK7..... I-F Amplifier
(3) RCA-12SQ7.... 2nd Detector, A-F Amplifier, A.V.C.
(4) RCA-50L6-GT..... Power Output
(5) RCA-35Z5-GT..... Rectifier

LOUDSPEAKER (RL-92-6)

Type..... 6-inch permanent magnet dynamic
V.C. Impedance at 400 Cycles..... 3.4 ohms

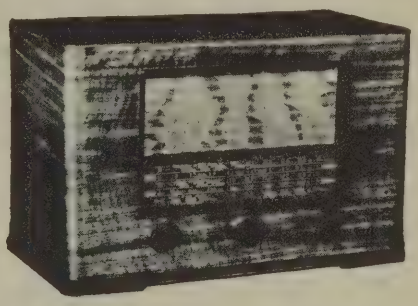
POWER SUPPLY RATINGS

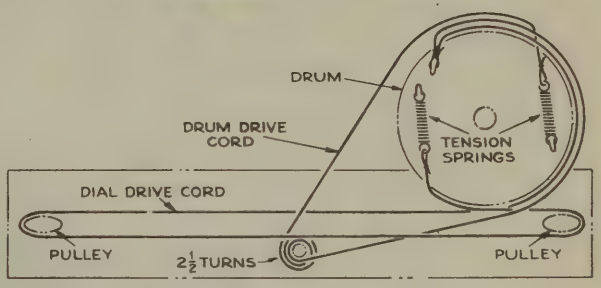
105-125 volts A-C 40-100 cycles or D-C..... 35 watts
160-200 volts A-C 40-100 cycles or D-C..... 55 watts
210-250 volts A-C 40-100 cycles or D-C..... 70 watts

| POWER OUTPUT | 117 V-DC | 230 V-DC |
|---|---|---|
| Undistorted | 1.5 watts | 2.3 watts |
| Maximum | 2.6 watts | 3.9 watts |

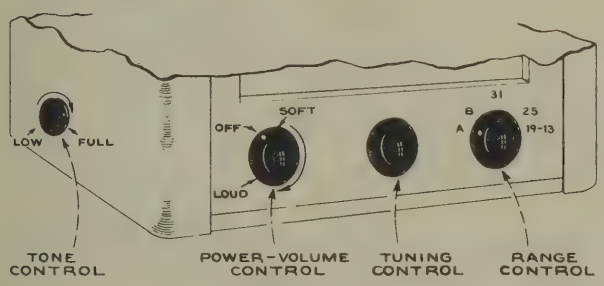
| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS (inches) | 11⅛ | 17⅛ | 8¾ |
| Chassis Base Dimensions (inches) | 2¾ | 15⅛ | 5¼ |

Overall Chassis Height..... 6¾ inches
Weight (net)..... 18 pounds
Tuning Drive Ratio..... 24 to 1






*Dial-Indicator and Drive Mechanism*

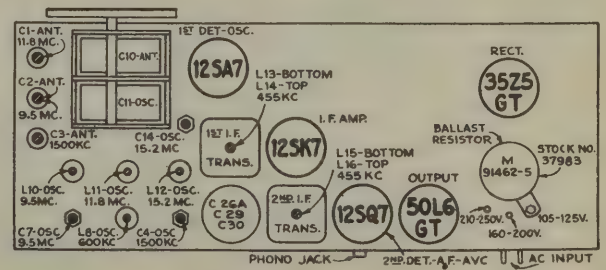



*Controls*

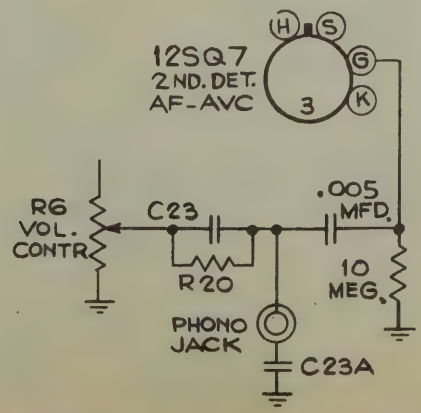
**Record Player Attachment.**—A jack is provided on the rear of chassis for connection to a Record Player Attachment. The cable from the attachment should be terminated in a Stock No. 31048 plug to fit the jack.

**Precautionary Lead Dress.—**

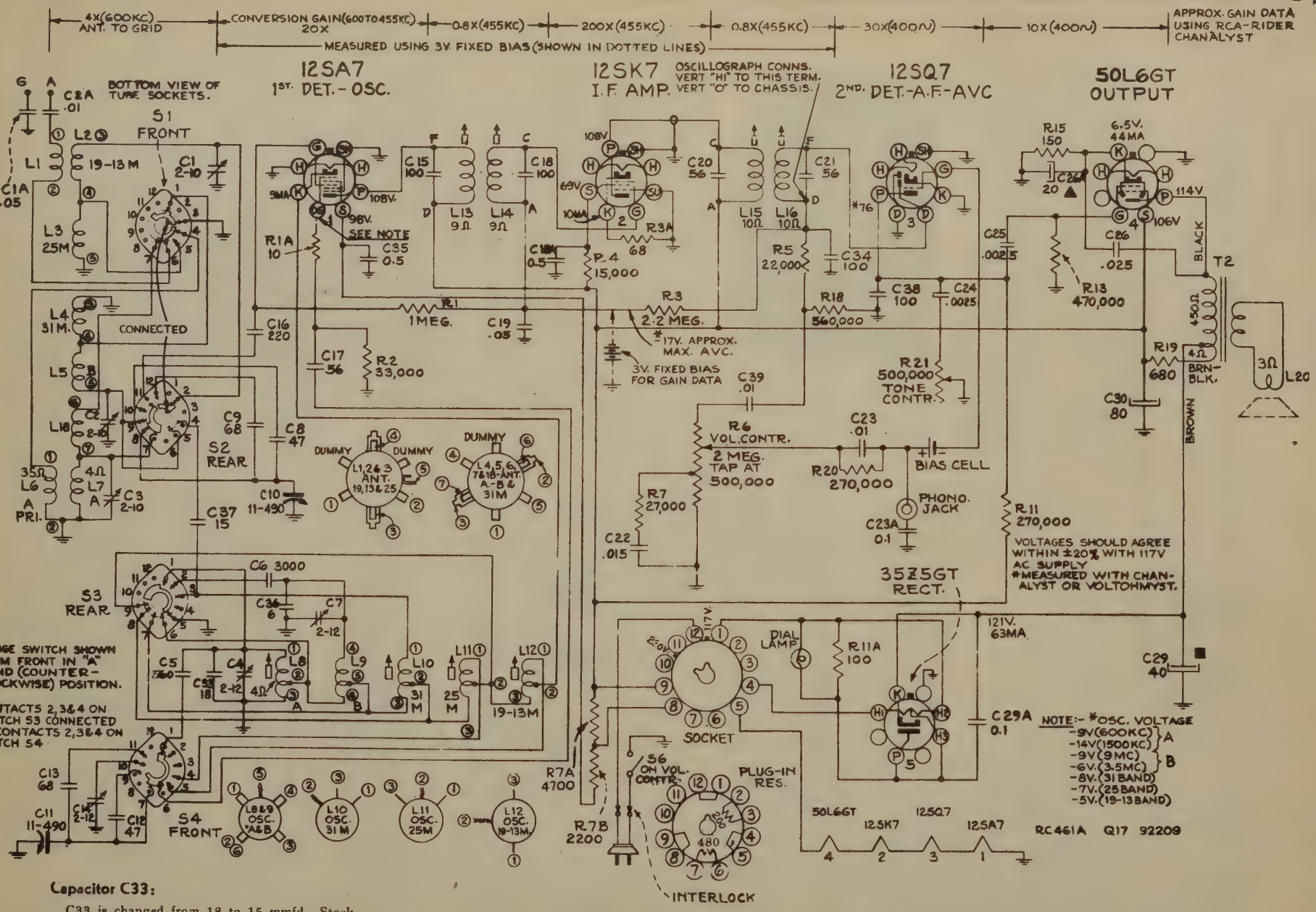
1. All leads between antenna coils and switch must be as short as possible, bunched together, and kept away from oscillator coils, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.




*Tube and Trimmer Location*



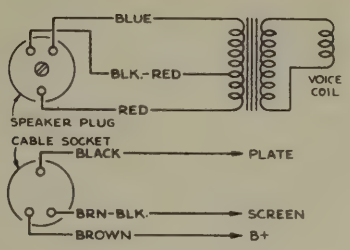

*When Model Q17 is used on 110-volt DC supply, the 1st-audio grid circuit should be changed as shown above to prevent distortion due to incorrect bias.*



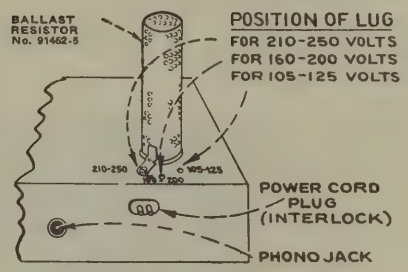

**Capacitor C33:**

C33 is changed from 18 to 15 mmfd., Stock No 12896.

*Schematic Circuit Diagram*




*Connections and Colors of Loudspeaker and Cable*




*Ballast Resistor*

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** Model Q17 (RC-561A) |
| 37983 | Ballast—Ballast tube resistor |
| 37981 | Bracket—Drive cord pulley and bracket |
| 37976 | Bracket—Tone control support bracket |
| 35642 | Calibrator—Drive drum calibrator dial |
| 34654 | Capacitor—Mica trimmer comprising 3 sections of 2.5-10 mmfd. |
| 12714 | Capacitor—Air trimmer—2-12 mmfd. |
| 35646 | Capacitor—6 mmfd. |
| 36012 | Capacitor—15 mmfd., ceramic (C37) |
| 12722 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic (C12) |
| 13141 | Capacitor—47 mmfd., silvered mica (C8) |
| 30949 | Capacitor—56 mmfd., mica (IF) |
| 12723 | Capacitor—56 mmfd., moulded mica |
| 35645 | Capacitor—68 mmfd., ceramic (C13) |
| 13057 | Capacitor—68 mmfd., silvered mica (C9) |
| 30904 | Capacitor—100 mmfd., mica (IF) |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 12480 | Capacitor—.05 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 31701 | Capacitor—0.5 mfd. |
| 35747 | Capacitor—Electrolytic comprising 1 section of 80 mfd. 300 volts, 1 section of 40 mfd. 300 volts, and 1 section of 20 mfd. 25 volts |
| 31581 | Cell—Bias cell |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—"A" and "B" band |
| 35624 | Coil—Oscillator coil—"19-13 meter" band |
| 35625 | Coil—Oscillator coil—"25 meter" band |
| 35626 | Coil—Oscillator coil—"31 meter" band |
| 35619 | Condenser—Two gang variable tuning condenser |
| 37977 | Control—Tone control |
| 37980 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord—(approx. 27 in. overall lgth.) |
| 34662 | Cord—Pointer cord (approx. 43 in. overall lgth.) |
| 35788 | Core—Adjustable core and stud for "A" and "B" band oscillator coil |
| 31259 | Core—Adjustable core and stud for "19-13 meter," "25 meter" and "31 meter" oscillator coils |
| 35627 | Drum—Tuning condenser drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 31580 | Holder—Bias cell holder |
| 37982 | Insulator—Insulator for phono socket |
| 33825 | Plug—2 prong male plug for power input |
| 5119 | Plug—3 contact female socket for speaker cable |
| 36627 | Pulley—Drive cord pulley |
| 37983 | Resistor—Ballast tube resistor |
| 13988 | Resistor—10 ohms, ½ watt |
| 14281 | Resistor—68 ohms, ½ watt |
| 35711 | Resistor—100 ohms, 4 watts |
| 30785 | Resistor—150 ohms, 1 watt |
| 32686 | Resistor—680 ohms, 1 watt |
| 34767 | Resistor—2,200 ohms, ½ watt |
| 3358 | Resistor—3,000 ohms, ½ watt |
| 30494 | Resistor—4,700 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drive drum |
| 37979 | Shaft—Tuning knob shaft |
| 35634 | Socket—Ballast tube resistor socket—"Cut-off terminals not required" |
| 31365 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Pointer cord or drive cord spring |
| 31261 | Spring—Retaining spring for adjustable core and stud assemblies |
| 35622 | Support—Flywheel and shaft support bracket |
| 37978 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 37983 | Tube—Ballast tube resistor |
| 2917 | Washer—"C" washer to hold tuning shaft |
| | **SPEAKER ASSEMBLIES** (RL-92-6) |
| 32907 | Cap—Dust cap |
| 36077 | Cone—Cone complete with voice coil |
| 5118 | Plug—3 prong male plug for speaker |
| 37985 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36103 | Decalcomania—"Off-Volume" decal |
| 37839 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 37987 | Dial—Glass dial scale |
| 37989 | Indicator—Station selector indicator |
| 35814 | Knob—Range switch or volume control knob |
| 35650 | Knob—Tone control knob |
| 35775 | Knob—Tuning knob |
| 31480 | Lamp—Dial lamp |
| 35653 | Mounting—Complete set of hardware to mount 1 speaker |
| 36793 | Rail—Pointer guide rail |
| 14270 | Spring—Retaining spring for knob Stock No. 35650 |
| 30900 | Spring—Retaining spring for knobs Stock Nos. 35814 and 35775 |

# MODEL 18T

## Chassis No. RC-511

## Eight-Tube, Three-Band, AC, Superheterodyne Receiver

## Electrical Specifications

| Frequency Ranges | |
|---|---|
| Broadcast | 540-1,560 kc |
| Medium Wave | 1.56-4.0 mc |
| Short Wave | 5.8-18.0 mc |
| Intermediate Frequency | 455 kc |

| Push-Button Ranges | |
|---|---|
| One station between approximately | 540-1,030 kc |
| Two stations between approximately | 610-1,250 kc |
| Two stations between approximately | 740-1,430 kc |
| One station between approximately | 880-1,560 kc |

Tube Complement

(1) RCA-6SK7 ..... R-F Amplifier
(2) RCA-6SA7 ..... 1st Detector-Oscillator
(3) RCA-6SK7 ..... I-F Amplifier
(4) RCA-6SQ7 ..... 2nd Detector, A.V.C., and A-F Amplifier
(5) RCA-6SF5 ..... Phase Inverter
(6) RCA-6K6GT ..... Power Output
(7) RCA-6K6GT ..... Power Output
(8) RCA-5Y3-G ..... Rectifier

Power Supply Ratings

105-125 volts, 50-60 cycles, 90 watts
105-125 volts, 25-60 cycles, 90 watts

Pilot Lamps

(2)... Mazda No. 51, 6.3 volts, 0.20 amp.

Power Output Rating

| | |
|---|---|
| Undistorted | 5.0 watts |
| Maximum | 5.5 watts |

Loudspeaker (RL-79-A5)

| | |
|---|---|
| Type | 6-inch Electrodynamic |
| V.C. Impedance | 3.4 ohms at 400 cycles |

## Mechanical Specifications

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 11⅞ | 18 | 10⅞ |
| Chassis Base Dimensions (inches) | 2¼ | 6¾ | 16 |
| Overall Chassis Height | | | 10¾ |

Weight ..... 25¾ lbs. (Shipping), 21¾ lbs. (Net)
Tuning Drive Ratio ..... 15-1

## Push Button Adjustment

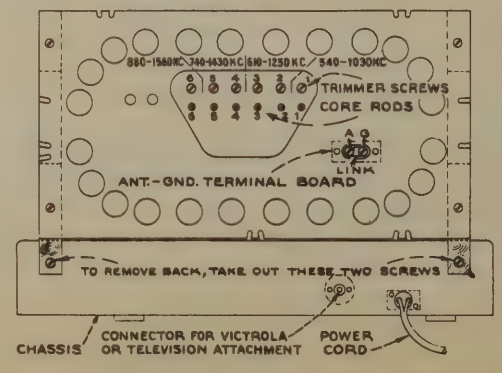
Six station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across "A" and "G" terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-14) to receive the station. It may be necessary to maintain approximate tracking between antenna and oscillator to receive weak stations. Approximate tracking will be indicated by noise, when tuned off a station, which will disappear when the station is correctly tuned.
4. After oscillator core is adjusted properly, adjust C-8 for maximum output.

   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the five remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Owing to the relatively high RF gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases, it is advisable to unscrew the push-button loop trimmers to minimum capacity before adjusting the push-button magnetite cores.



# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

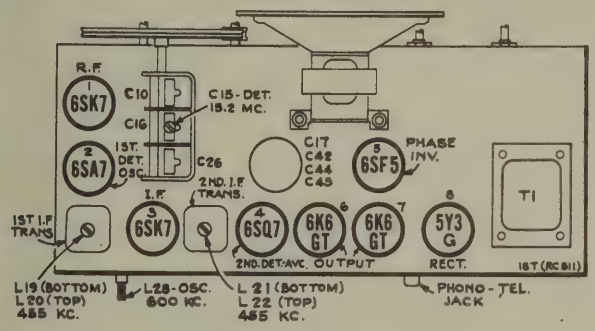
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration for Alignment.**—The proper dial calibration for alignment purposes can be set up in two ways:

1. The dial may be removed from the cabinet by sliding out the two spring pieces which clamp it in its mounting position. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial slipped under the pointer so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced including the fibre light shields which are folded under the ends of the glass scale.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

**Pointer for Calibration Scale.**—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.



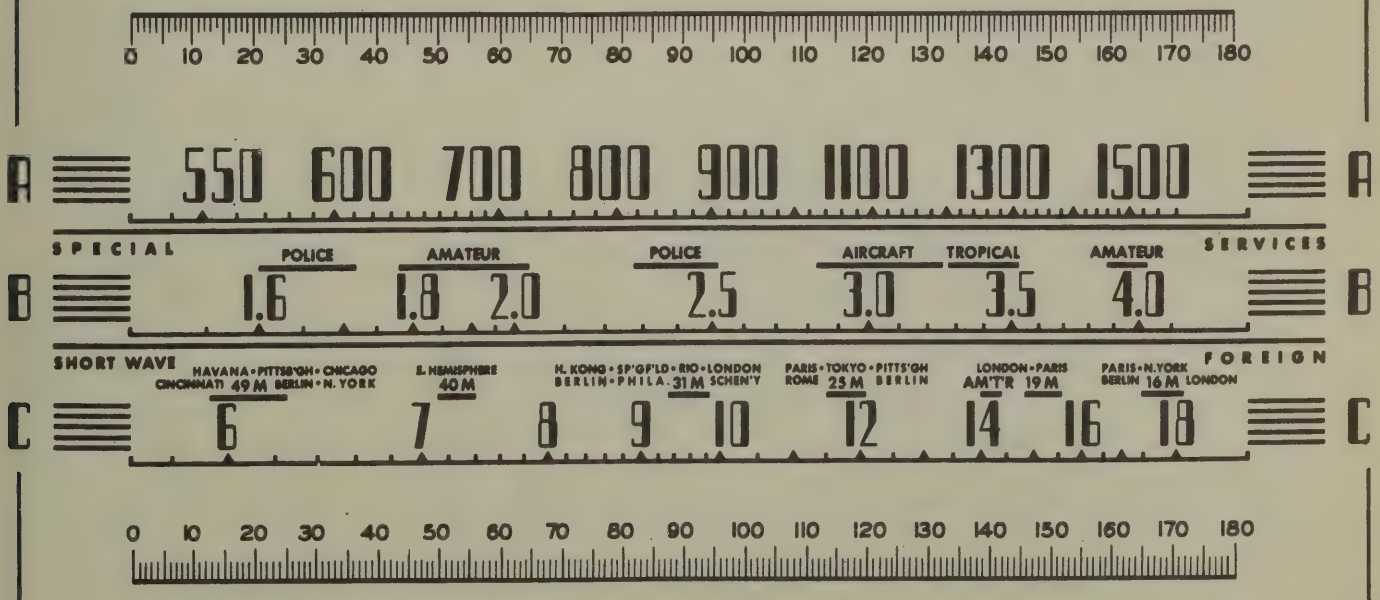

| Steps | Connect high side of test oscillator to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with 0.01 mfd. | 455 kc | "A" band Quiet Point between 550 and 750 kc | L-21 and L-22 (2nd I-F Trans.) |
| 2 | 6SA7 grid in series with 0.01 mfd. | | | L-19 and L-20 (1st I-F Trans.) |
| 3 | Antenna terminal in series with 300 ohms ("A" antenna trimmer C-11, should be ¼ turn out) | 15.2 mc | 15.2 mc (149°) "C" band | C-24 (Osc.)* C-15 (Det.) Rock gang C-1 (R-F) Rock gang |
| 4 | Antenna terminal in series with 200 mmf. | 2.44 mc | 2.44 mc (91.5°) "B" band | C-27 (Osc.) C-19 (Det.) |
| 5 | Antenna terminal in series with 200 mmf. (Preset "A" osc. trimmer C-28 ¼ turn out) | 600 kc | 600 kc (33.2°) "A" band | L-23 Rock gang |
| 6 | Antenna terminal in series with 200 mmf. | 1,500 kc | 1,500 kc (163.4°) "A" band | C-23 (Osc.) C-20 (Det.) C-11 (R-F) |
| 7 | Repeat step 5, then 6 | | | |
| 8 | Antenna terminal in series with 300 ohms | 15.2 mc | 15.2 mc (149°) "C" band | C-1 (R-F) Rock gang |

* Use minimum capacity peak if two can be obtained. Check to determine that C-24 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

Note.—Oscillator tracks above signal on all bands.

To reduce sensitivity during RF Alignment connect a 15,000 ohm, ½ watt resistor across secondary of 1st IF transformer.

## Calibration Scale


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
A
550 600 700 800 900 1100 1300 1500
A
SPECIAL
POLICE
AMATEUR
POLICE
AIRCRAFT
TROPICAL
AMATEUR
SERVICES
B
1.6 1.8 2.0 2.5 3.0 3.5 4.0
B
SHORT WAVE
HAVANA • PITTSB'GH • CHICAGO CINCINNATI 49 M BERLIN • N. YORK
E. HEMISPHERE 40 M
H. KONG • SP'GF'LD • RIO • LONDON BERLIN • PHILA. 31 M SCHEN'Y
PARIS • TOKYO • PITTS'GH ROME 25 M BERLIN
LONDON • PARIS AM'TR 19 M
PARIS • N.YORK BERLIN 16 M LONDON
FOREIGN
C
6 7 8 9 10 12 14 16 18
C
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Receiver Dial Scales, and Corresponding Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 33.2° on the calibration scale corresponds to 600 kc on "A" bank. Read instructions under "Alignment Procedure."

For proper dial calibration, the pointer should fall on the scratch mark on the dial backing plate with condenser fully meshed. This scratch is 8¼ inches from the left extremity of the plate.

APPROX. GAIN DATA USING RCA RIDER CHANALYST

4X (ANT. TO GRID - 600 KC.)

1.5 X (A.V.C. WORKING)
5X (A.V.C. BUS GROUNDED)
6X (IN R.B. POSITION - A.V.C. WORKING - C8 & L14 TUNED TO 600 KC.)
15X (IN R.B. POSITION - A.V.C. BUS GROUNDED - C8 & L14 TUNED TO 600 KC.)

CONVERSION GAIN
14X (A.V.C. WORKING)
75X (A.V.C. BUS GROUNDED)
(600 TO 455 KC.)

1X (455 KC.)

60X (A.V.C. WORKING)
200X (A.V.C. BUS GROUNDED)

0.5X (455 KC.)

60X (400 ~)

40X (400 ~)

15X (400 ~)

6SK7 R.F.

6SA7 1ST. DET. - OSC.

6SK7 I.F.

6SQ7 2ND. DET.-A.F.-A.V.C.

6SF5 PHASE INV.

6K6-GT OUTPUT

LINK CLOSED FOR LOOP OPERATION

BOTTOM VIEW OF TUBE SOCKETS.

"A" & "B" LOOP

"C" BAND LOOP

DET. COILS

1ST. I.F. TRANS.

2ND. I.F. TRANS.

R11 VOL. CONTR. 2 MEG. TOTAL TAP AT 500,000 Ω

PHONO-TELEV. JACK

6K6GT OUTPUT

RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN PUSH BUTTON (MAX. COUNTER CLOCKWISE) POSITION.

R.B. SW. (TOP SECTION)

R.B. SW. (BOTTOM SECTION)

OSC. COILS

R11 VOL. CONTROL 250,000 Ω TOTAL TAP AT 60,000 Ω

VOLUME CONTROL CIRCUIT USED IN SOME MODELS.

SWITCH ON VOL. CONTR. S21

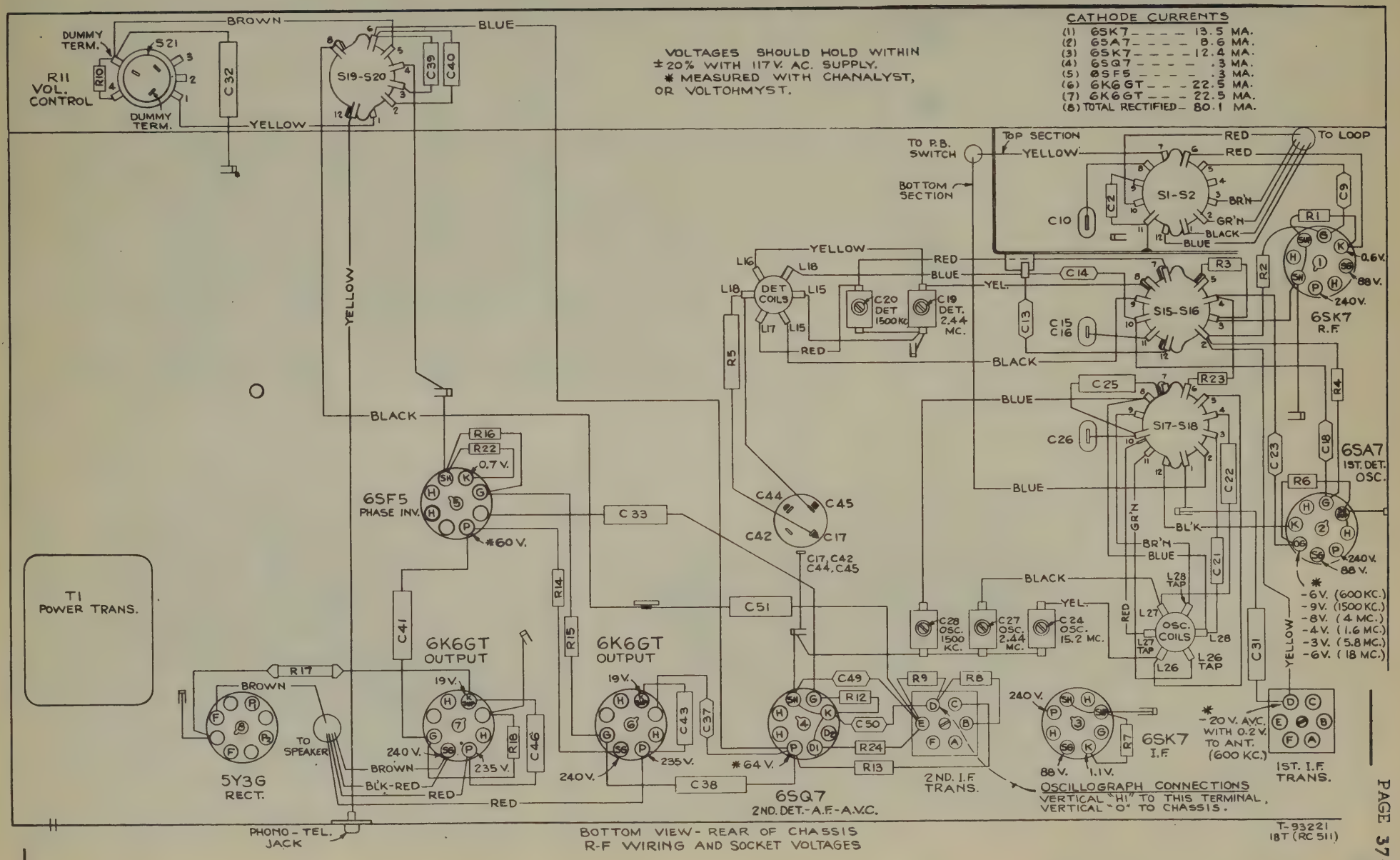
5Y3G RECT.

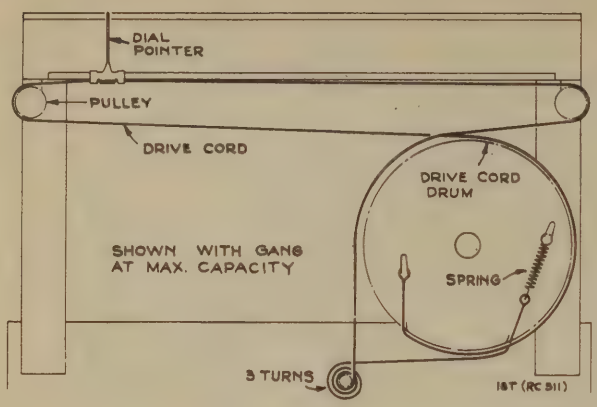
T1

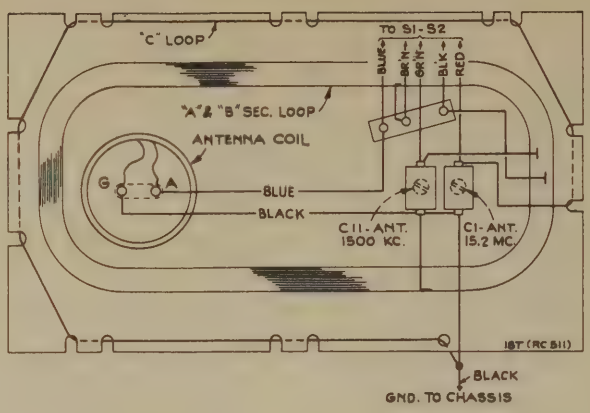
1060 Ω FIELD L25

TO HEATERS (#7 DIRECT) & DIAL LAMP

T-93177-3
18T (RC511)


CATHODE CURRENTS
(1) 6SK7 - - - - 13.5 MA.
(2) 6SA7 - - - - 8.6 MA.
(3) 6SK7 - - - - 12.4 MA.
(4) 6SQ7 - - - - .3 MA.
(5) 6SF5 - - - - .3 MA.
(6) 6K6GT - - - 22.5 MA.
(7) 6K6GT - - - 22.5 MA.
(8) TOTAL RECTIFIED - 80.1 MA.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST, OR VOLTOHMYST.
R11 VOL. CONTROL
DUMMY TERM.
S21
R10
C32
S19-S20
C39
C40
BROWN
BLUE
YELLOW
TO P.B. SWITCH
TOP SECTION
BOTTOM SECTION
S1-S2
C10
C2
C9
RED
TO LOOP
BR'N
GR'N
BLACK
R1
6SK7 R.F.
0.6 V.
88 V.
240 V.
R3
R2
R4
S15-S16
C14
C13
C15 C16
DET COILS
L16
L18
L15
L17
C20 DET 1500 KC.
C19 DET. 2.44 MC.
R5
C25
R23
S17-S18
C26
C22
C23
C18
6SA7 1ST. DET. OSC.
R6
C21
BL'K
L28 TAP
L27
L27 TAP
OSC. COILS
L26
L26 TAP
L28
C28 OSC. 1500 KC.
C27 OSC. 2.44 MC.
C24 OSC. 15.2 MC.
C31
* -6 V. (600 KC.)
-9 V. (1500 KC.)
-8 V. (4 MC.)
-4 V. (1.6 MC.)
-3 V. (5.8 MC.)
-6 V. (18 MC.)
T1 POWER TRANS.
6SF5 PHASE INV.
R16
R22
0.7 V.
*60 V.
C33
C44
C45
C42
C17
C17, C42 C44, C45
C51
R14
R15
C41
6K6GT OUTPUT
6K6GT OUTPUT
19 V.
R17
BROWN
TO SPEAKER
240 V.
235 V.
R18
C46
C43
C37
C38
BROWN
BLK-RED
RED
RED
5Y3G RECT.
C49
R12
C50
R24
R13
R9
R8
*64 V.
6SQ7 2ND. DET.-A.F.-A.V.C.
2ND. I.F. TRANS.
240 V.
88 V.
1.1 V.
R7
6SK7 I.F.
* -20 V. A.V.C. WITH 0.2 V. TO ANT. (600 KC.)
1ST. I.F. TRANS.
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL,
VERTICAL "O" TO CHASSIS.
PHONO-TEL. JACK
BOTTOM VIEW - REAR OF CHASSIS
R-F WIRING AND SOCKET VOLTAGES
T-93221
18T (RC 511)
PAGE 375-C
18T



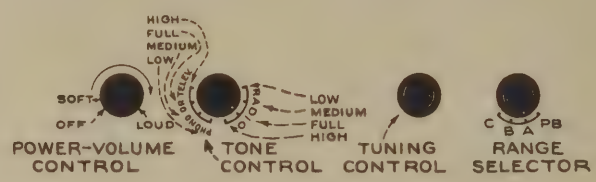




### Failure to Oscillate on Push-Button Tuning:

Should a case of non-oscillation on any push-button range be experienced, check the oscillator grid leak to assure that it is 56,000 ohms. Some sets employed a 33,000 ohm leak which was occasionally found troublesome with low line voltage.

### Low-Frequency Oscillator Push-Button Coil:

To ensure low-frequency coverage on the push-button oscillator coils in these models, a high-inductance coil, Stock No. 37133, is used for the 540-1,030 kc push-button oscillator ranges.




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-511)** |
| 34785 | Board—"Antenna-Ground" board |
| 31292 | Capacitor—Mica trimmer for loop—comprising 2 sections of 3-30 mmfd. |
| 35792 | Capacitor—Mica trimmer—comprising 2 sections of 3-30 mmfd. |
| 35791 | Capacitor—Mica trimmer—comprising 3 sections of 8-80 mmfd. |
| 13001 | Capacitor—8.2 mmfd. |
| 35804 | Capacitor—Mica trimmer — comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd. and 1 section of 100-540 mmfd. |
| 12896 | Capacitor—15 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 34699 | Capacitor—100 mmfd. (in 1st I.F. can) |
| 12720 | Capacitor—100 mmfd. |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 12952 | Capacitor—330 mmfd. |
| 35877 | Capacitor—720 mmfd. |
| 34787 | Capacitor—2,850 mmfd. |
| 13895 | Capacitor—5,600 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 33014 | Capacitor—Electrolytic — comprising 3 sections of 10 mfd. and 1 section of 20 mfd. |
| 35785 | Coil—Loop primary (L1) |
| 35803 | Coil—Push button oscillator coil |
| 35789 | Coil—Oscillator coil |
| 35805 | Coil—R. F. coil |
| 35796 | Condenser—Variable tuning condenser |
| 35807 | Control—Volume control (½ meg.) and power switch |
| 36250 | Control—Volume control (2 meg.) and power switch |
| 32634 | Cord—Drive cord |
| 35788 | Core—Core and stud for oscillator coil |
| 35795 | Dial—Calibrator dial |
| 35794 | Drum—Tuning condenser drive drum—less calibrator |
| 35799 | Frame—Dial frame complete—less dial scale |
| 35798 | Indicator—Station selector indicator |
| 35786 | Loop—Antenna loop winding |
| 35784 | Loop—Complete antenna loop with trimmer, coil and "Antenna-Ground" board |
| 13988 | Resistor—10 ohm, ½ watt |
| 13220 | Resistor—56 ohm, ½ watt |
| 14439 | Resistor—100 ohm, ½ watt |
| 35885 | Resistor—470 ohm, 2 watt |
| 13716 | Resistor—2,200 ohm, ½ watt |
| 14024 | Resistor—2,700 ohm, ½ watt |
| 14559 | Resistor—10,000 ohm, ½ watt |
| 35875 | Resistor—12,000 ohm, 3 watt |
| 12695 | Resistor—15,000 ohm, ½ watt |
| 13998 | Resistor—22,000 ohm, ½ watt |
| 12454 | Resistor—33,000 ohm, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohm, ½ watt |
| 12679 | Resistor—2.2 megohm, ½ watt |
| 13601 | Resistor—10 megohm, ½ watt |
| 14350 | Screw—No. 8-32 square-head set-screw for drum |
| 35797 | Shaft—Tuning shaft and pulley |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phonograph input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35802 | Switch—Push button switch — less coils and trimmer |
| 35793 | Switch—Range switch |
| 36249 | Switch—Tone switch |
| 35636 | Transformer—First I.F transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer, 110 volt, 25 cycle |
| 35800 | Transformer—Power transformer, 110 volt, 60 cycle |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL79A5)** |
| 35849 | Cap—Speaker cone dust cap |
| 35810 | Coil—Field coil, 1,060 ohm |
| 35441 | Cone—Cone complete with voice coil |
| 35809 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35813 | Bezel—Push button bezel |
| 35812 | Button—Push button (dark brown) |
| 36300 | Button—Push button (light brown) |
| 35914 | Decalcomania—Control panel decal |
| 35392 | Decalcomania—"RCA Victor" decal |
| 35811 | Dial—Glass dial scale |
| 35814 | Knob—Range or tone switch knob (dark brown) |
| 36297 | Knob—Range or tone switch knob (light brown) |
| 35775 | Knob—Tuning or volume control knob (dark brown) |
| 36298 | Knob—Tuning or volume control knob (light brown) |
| 11765 | Lamp—Dial lamp |
| 36149 | Marker—Push button marker |
| 30900 | Spring—Retaining spring for knobs, Stock No. 35814 |

# MODEL 19K

## Chassis No. RC-512A

# Nine-Tube, Three-Band, A-C, Loop, Superheterodyne

## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast "A" | 540-1,600 kc |
| Medium Wave "B" | 1.5-4.0 mc |
| Short Wave "C" | 5.8-18.0 mc |

| | |
|---|---|
| INTERMEDIATE FREQUENCY | 455 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6H6 | 2nd Detector, A.V.C. |
| (5) RCA-6SF5 | A-F Amplifier |
| (6) RCA-6SF5 | Phase Inverter |
| (7) RCA-6F6-G | Power Output |
| (8) RCA-6F6-G | Power Output |
| (9) RCA-5Y3-G | Rectifier |

| | |
|---|---|
| PILOT LAMPS (2) | Mazda No. 51, 7.5 volts, 0.20 amp. |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 5 watts |
| Maximum | 5.5 watts |

CABINET DIMENSIONS

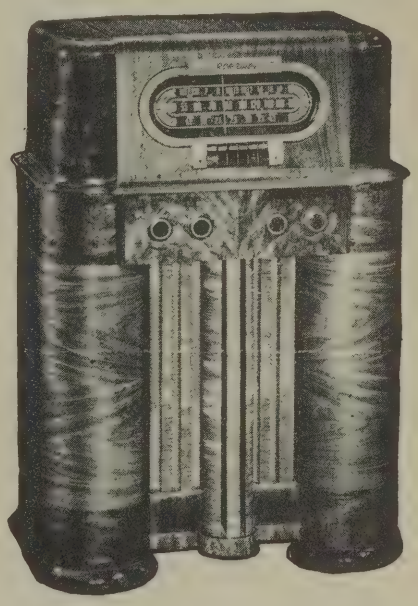
| | |
|---|---|
| Height | 41 inches |
| Width | 28 inches |
| Depth | 16 inches |
| Weight (shipping) | 80 pounds |
| Weight (net) | 60 pounds |
| Chassis Base Dimensions (inches) | Height 2¾, Width 18, Depth 6¾ |
| Overall Chassis Height | 12½ inches |
| Tuning Drive Ratio | 15 to 1 |

LOUDSPEAKER (RL 70J-1)

| | |
|---|---|
| Type | 12 inch electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

POWER SUPPLY RATINGS

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 100 watts |
| Rating B | 105-125 volts, 25-60 cycles, 100 watts |

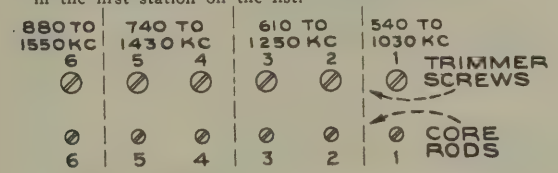


## Adjustment for Electric Tuning

This model has six push buttons for electric tuning. The buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the six desired stations, arranged in order from low to high frequencies.
2. Turn Range Control knob to "A" position, and manually tune in the first station on the list.




*Push Button Adjustments*

Turn the Loop Antenna to give minimum pickup of signal, no outside antenna should be used and link on antenna board should be closed.

3. Turn Range Control knob to "PB" and press push button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.

   Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push button antenna trimmers to minimum capacity before adjusting the oscillator cores.

   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining five stations in the same manner.
6. After all six stations are tuned-in on the buttons, turn the Loop Antenna to a position giving the best signal pickup and make a final careful adjustment of all core rods until best reception is obtained for each. Outdoor antenna should now be reconnected if used.

### Increasing Sensitivity:

These models have an untuned R-F stage which is resistance-coupled to the 1st-detector. The sensitivity may be increased by changing the R-F plate load resistor to a higher value, between 6,000 and 10,000 ohms. This change is not recommended in metropolitan localities owing to possiblity of cross-modulation.

### Failure to Oscillate on Push-Button Tuning:

Should a case of non-oscillation on any push-button range be experienced, check the oscillator grid leak to assure that it is 56,000 ohms. Some sets employed a 33,000 ohm leak which was occasionally found troublesome with low line voltage.

### Low-Frequency Oscillator Push-Button Coil:

To ensure low-frequency coverage on the push-button oscillator coils in these models, a high-inductance coil, Stock No. 37133, is used for the 540-1,030 kc push-button oscillator ranges.

# Alignment Procedure

**Cathode-Ray Augnment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

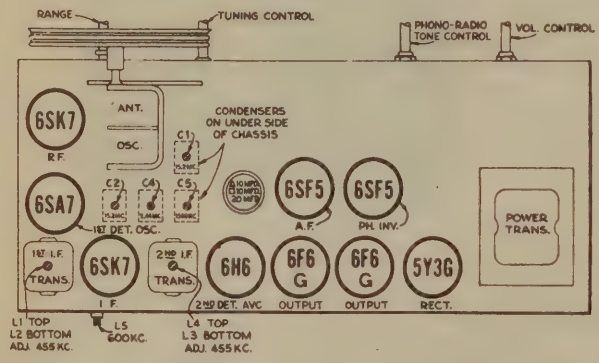
**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Preacautionary Lead Dress.—**

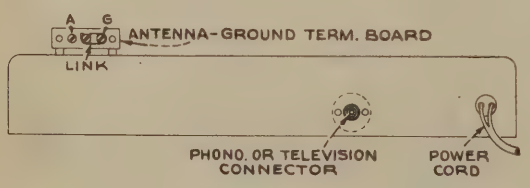
1. Dress 2nd I.F leads close to chassis.
2. Dress leads from volume control and tone switch away from filaments, diode and power leads.
3. Dress .005 mfd. volume control condenser away from electrolytic.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" | Quiet Point near 180° | L3 and L4 (2nd I-F Trans.) |
| 2 | 6SA7 1st Detector in series with .01 mfd. | | | | L1 and L2 (1st I-F Trans.) |
| 3 | Ant. terminal "A" in series with 47 mmf. | 15.2 mc | "C" | 148.5° | C1 (ant.) C2 (osc.)* |
| 4 | Ant. section of gang condenser in series with 300 ohms | 2.44 mc | "B" | 97° | C4 (osc.)* |
| 5 | | 1,500 kc | "A" | 160° | C5 (osc.)* |
| 6 | | 600 kc | | 30° | L5 (osc.) (Rock gang) |
| 7 | Fasten chassis in cabinet. Connect loop, see that link is closed on the antenna board, attach dial indicator to drive cord, with indicator at 540 kc mark and gang at maximum capacity. | | | | |
| 8 | Radiation loop consisting of two turns of wire 18 in. in diameter located 4 to 6 feet from receiver | 1,500 kc | "A" | 1,500 kc | C3 (ant.) (on loop) |
| 9 | | 600 kc | | 600 kc | L5 (osc.) (Rock gang) |
| 10 | | Repeat steps 8 and 9 | | | |

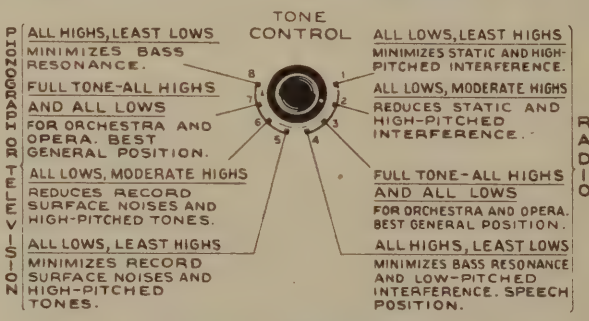
* Use minimum capacity peak of two peaks can be obtained.
**Note:** Oscillator tracks above signal on all bands.




*Tube and Trimmer Locations*

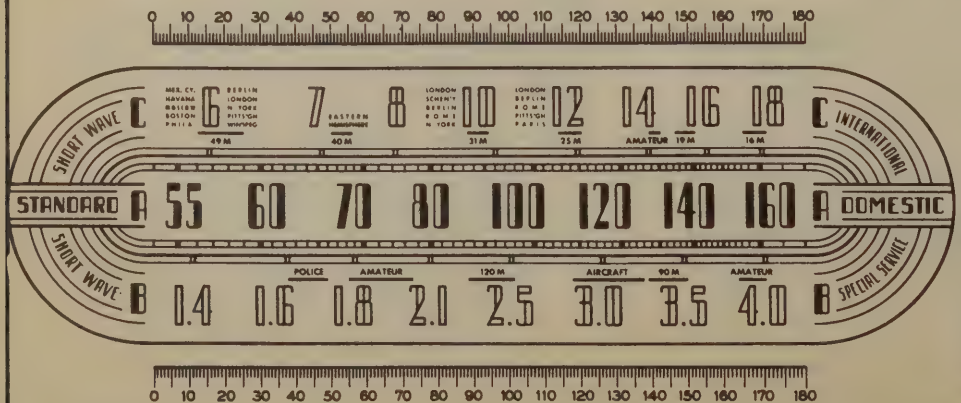



*Back of Chassis*


TONE CONTROL
PICKUP OR TELEVISION
RADIO
ALL HIGHS, LEAST LOWS
MINIMIZES BASS RESONANCE.
FULL TONE-ALL HIGHS AND ALL LOWS
FOR ORCHESTRA AND OPERA. BEST GENERAL POSITION.
ALL LOWS, MODERATE HIGHS
REDUCES RECORD SURFACE NOISES AND HIGH-PITCHED TONES.
ALL LOWS, LEAST HIGHS
MINIMIZES RECORD SURFACE NOISES AND HIGH-PITCHED TONES.
ALL LOWS, LEAST HIGHS
MINIMIZES STATIC AND HIGH-PITCHED INTERFERENCE.
ALL LOWS, MODERATE HIGHS
REDUCES STATIC AND HIGH-PITCHED INTERFERENCE.
FULL TONE-ALL HIGHS AND ALL LOWS
FOR ORCHESTRA AND OPERA. BEST GENERAL POSITION.
ALL HIGHS, LEAST LOWS
MINIMIZES BASS RESONANCE AND LOW-PITCHED INTERFERENCE. SPEECH POSITION.

*Tone Control and Phono-Radio Switch*

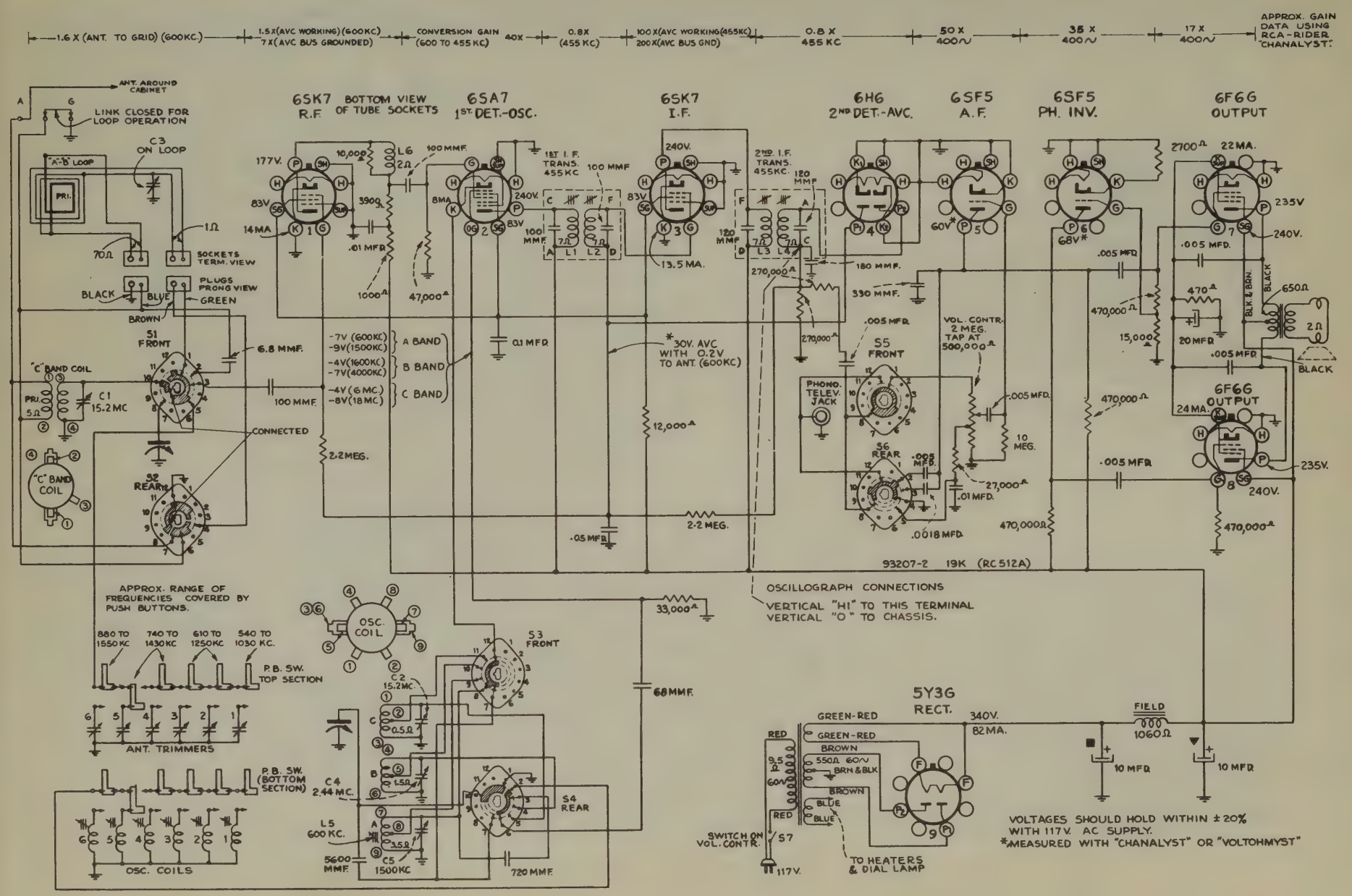
*Location of Controls*




## Calibration Scale

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 30° on the calibration scale corresponds to approximately 600 kc on "A" band. Read instructions under "Alignment Procedure."

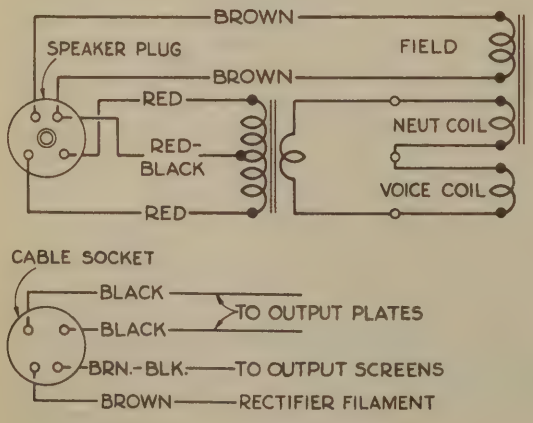



*Schematic Circuit Diagram*

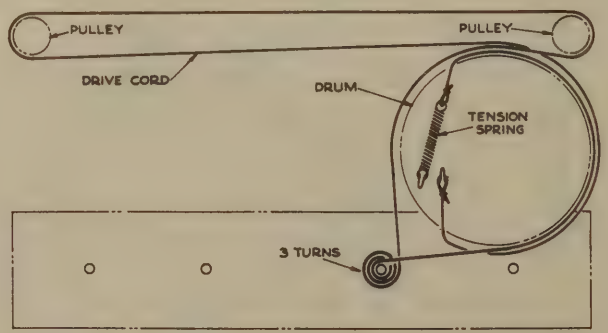
# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-512A)** |
| 35966 | Board—"Antenna-Ground" board |
| 35795 | Calibrator—Drive drum calibrator |
| 35961 | Capacitor—Mica trimmer (C1) |
| 14079 | Capacitor—6.8 mmfd. |
| 35791 | Capacitor—Mica trimmer comprising 3 sections (C2, C4, C5) |
| 35804 | Capacitor—Mica trimmer comprising 6 sections for push buttons 1, 2, 3, 4, 5, 6 |
| 13057 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., mica |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 12952 | Capacitor—330 mmfd. |
| 35877 | Capacitor—720 mmfd. |
| 13895 | Capacitor—5,600 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 14393 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 35858 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 400 volts each and 1 section of 20 mfd., 25 volts |
| 35965 | Coil—Antenna coil—"C" band |
| 35876 | Coil—Coil and resistor assembly L6 |
| 35789 | Coil—Oscillator coil (A, B, C) |
| 35803 | Coil—Push button switch oscillator coil |
| 35960 | Condenser—Variable tuning condenser |
| 35962 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord |
| 35788 | Core—Adjusting core and stud for oscillator coil (L5) |
| 35871 | Core—Adjusting core and stud for push button oscillator coils 1, 2, 3, 4, 5, 6 |
| 35794 | Drum—Tuning condenser drive drum—less calibrator |
| 35970 | Indicator—Station selector indicator and carriage |
| 35972 | Plate—Dial plate complete with drive cord pulleys |
| 36009 | Plug—2-contact male plug for loop cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 35973 | Pulley—Drive cord pulley |
| 32165 | Resistor—470 ohms, 2 watts |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 14024 | Resistor—2,700 ohms, ½ watt |
| 30694 | Resistor—3,900 ohms, ½ watt |
| 35875 | Resistor—12,000 ohms, 3 watts |
| 12695 | Resistor—15,000 ohms, ½ watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35968 | Shaft—Tuning shaft and pulley |
| 35772 | Shield—Bottom shield for power transformer |
| 35709 | Shield—Top shield for power transformer |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35787 | Socket—Phono. input socket |
| 35974 | Support—Dial plate support |
| 35967 | Switch—Push button selector switch |
| 35964 | Switch—Range switch (S1, S2, S3, S4) |
| 35963 | Switch—Tone switch (S5, S6) |
| 35636 | Transformer—First I-F transformer |
| 35790 | Transformer—Second I-F transformer |
| 35588 | Transformer—Power transformer—110 volts, 25 cycle |
| 35959 | Transformer—Power transformer—110 volts, 60 cycle—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-70J1)** |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil |
| 33116 | Coil—Speaker field coil |
| 31275 | Cone—Speaker cone, voice coil, and dust cap |
| 5039 | Plug—4-prong male, for speaker |
| 33444 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36005 | Button—Push button |
| 35998 | Capacitor—Mica trimmer (C3) for loop |
| 36002 | Coil—Loop primary coil |
| 35914 | Decalcomania—Control panel decal |
| 36019 | Dial—Glass dial scale |
| 36006 | Escutcheon—Dial scale escutcheon—less dial |
| 36003 | Knob—Tone or range switch knob |
| 36004 | Knob—Tuning or volume control knob |
| 11765 | Lamp—Dial lamp |
| 35997 | Loop—Antenna loop |
| 36149 | Marker—Station selector push button markers |
| 36802 | Mounting—Loop mounting clip |
| 35029 | Mounting—Speaker mounting hardware |
| 35999 | Socket—Two contact socket for antenna loop |
| 34053 | Spring—Push button spring |
| 14270 | Spring—Retaining spring for knobs |



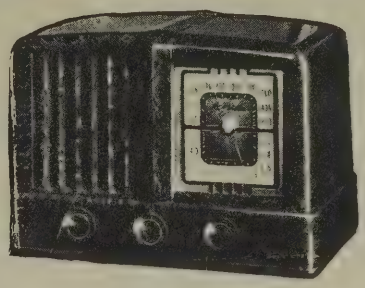

*Connections and Colors of Loudspeaker and Cable*



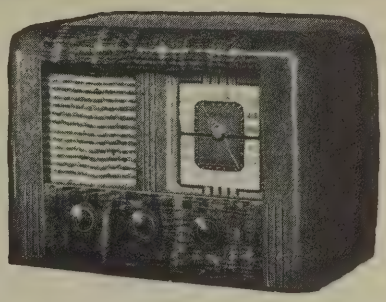

*Arrangement o Drive Cords for Tuning Condenser and Dial Indicator*

# MODELS Q20 and Q21

## Five-Tube, Two-Band, A-C, Superheterodyne Receivers Chassis No. RC-514



*Model Q20*



*Model Q21*

## Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast (A)..... 540-1,800 kc (555-166 m)
Short Wave (C)..... 4.5-18 mc (66.7-16.6 m)
Intermediate Frequency..... 455 kc

RCA TUBE COMPLEMENT

(1) RCA-6SA7..... First Detector—Oscillator
(2) RCA-6SK7..... Intermediate Amplifier
(3) RCA-6SQ7.. Second Detector, A.V.C and A-F Amplifier
(4) RCA-6K6-GT..... Power Output
(5) RCA-5Y3-G..... Full-Wave Rectifier
Pilot Lamp..... Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 50 watts
Rating B..... 105-125 volts, 25-60 cycles, 50 watts
Rating C..... 105-125, 200-250 volts, 50-60 cycles, 50 watts

POWER OUTPUT RATING

Undistorted..... 1.5 watts
Maximum..... 2.3 watts

LOUDSPEAKER

Type (RL-81-A2)..... 5-inch permanent-magnet dynamic
Voice-coil Impedance..... 4.5 ohms at 400 cycles

CABINET DIMENSIONS

| | Model Q20 | Model Q21 |
|---|---|---|
| Height | 8¼ inches | 9½ inches |
| Width | 12 inches | 13¼ inches |
| Depth | 6¾ inches | 6¾ inches |
| Weight (net) | 10¾ pounds | 11 pounds |

Chassis Base Dimensions.. 10½ in. wide, 5 in. deep, 2 in. high
Over-all Chassis Height..... 7⅜ inches
Tuning Drive Ratio..... 25 to 1

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-514)** |
| 33817 | Capacitor—Mica trimmer (C3) |
| 12723 | Capacitor—56 mmfd. |
| 30949 | Capacitor—56 mmfd. (2nd. I-F) |
| 34699 | Capacitor—100 mmfd. (1st. I-F) |
| 12720 | Capacitor—100 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 31405 | Capacitor—6,000 mmfd. |
| 30303 | Capacitor—.0035 mfd. |
| 4838 | Capacitor—.005 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 14393 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 35761 | Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 10 mfd. |
| 35762 | Coil—Antenna coil |
| 35763 | Coil—Oscillator coil |
| 35760 | Condenser—Variable tuning condenser |
| 32713 | Core—Adjusting core and stud for oscillator coil (L5) |
| 32634 | Cord—Drive cord |
| 35770 | Dial—Dial scale |
| 35768 | Drum—Drive drum |
| 36043 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp—Mazda No. 51 |
| 35769 | Plate—Dial plate—less dial scale |
| 31024 | Resistor—680 ohms, ½ watt |
| 30152 | Resistor—1,000 ohms, 1 watt |
| 8073 | Resistor—12,000 ohms, 2 watts |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35771 | Shaft—Tuning shaft |
| 35772 | Shield—Bottom end shield for power transformer |
| 35709 | Shield—Top end shield for power transformer |
| 35766 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31319 | Socket—Tube socket (6SA7) |
| 13638 | Spring—Drive cord spring |
| 35767 | Support—Tuning condenser support |
| 30953 | Switch (S3) |
| 35765 | Switch—Range switch (S1) |
| 35636 | Transformer—First I-F transformer |
| 35628 | Transformer—Second I-F transformer |
| 35758 | Transformer—Power transformer—110 volts, 25 cycle—less end shields |
| 35757 | Transformer—Power transformer—110 volts, 60 cycle—less end shields |
| 35759 | Transformer—Power transformer—Univ. 60 cycle |
| 35764 | Volume control and power switch (S2) |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-81A2)** |
| 32907 | Cap—Cone dust cap |
| 35570 | Cone—Cone complete with voice coil |
| 35774 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35104 | Crystal—Escutcheon and crystal for Model Q20 |
| 35105 | Crystal—Escutcheon and crystal for Model Q21 |
| 35678 | Fastener—Push on fastener for crystal, Stock No. 35104 |
| 37662 | Knob—Tuning, range switch or volume control knob for Model Q20 |
| 35775 | Knob—Tuning, range switch or volume control knob for Model Q21 |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 35679 and 35775 |
| 35787 | Socket—Phono input |

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

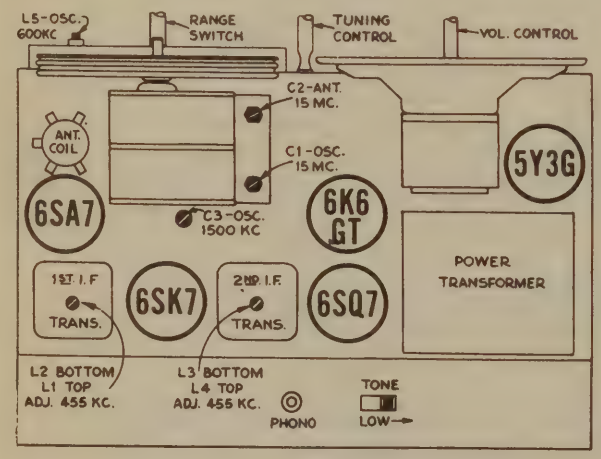
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

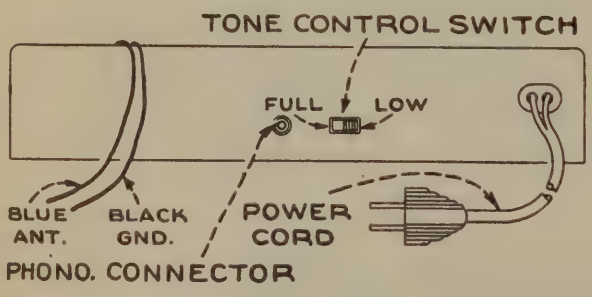
**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

**Precautionary Lead Dress.—**

1. Green lead from oscillator section of var. condenser should be dressed away from antenna leads.
2. 6,000 mmfd. capacitor should bear against electrolytic capacitor.
3. Dress blue I.F. lead against chassis.
4. .005 volume control capacitor should be dressed away from output plate leads.




*Tube and Trimmer Location*




*Back of Chassis*

*Controls*

## Alignment Procedure

| Steps | Connect test-osc. output to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | I-F grid through 0.1 mfd. capacitor and ground | 455 kc | Quiet point between 550-750 kc | L-3 and L-4 (2nd I-F trans.) |
| 2 | 1st det. grid through 0.1 mfd. capacitor and ground | 455 kc | | L-1 and L-2 (1st I-F trans.) |
| 3 | Antenna Lead in series with 300 ohms | 15 mc | 15 mc "C" band | C-1 oscillator* |
| 4 | | 15 mc | Rock at 15 mc | C-2 antenna† while rocking |
| 5 | Antenna terminal in series with 200 mmfd. | 1,500 kc | 1,500 kc "A" band | C-3 oscillator |
| 6 | | 600 kc | Rock at 600 kc "A" band | L-5 oscillator while rocking |
| 7 | | 1,500 kc | 1,500 kc "A" band | C-3 oscillator |

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

† If two peaks can be obtained use low frequency (maximum capacity) peak.

## GAIN DATA

### (as taken with the RCA-Rider Chanalyst)

(A) R.F.—I-F Gain (R.F.—I.F. Channel) — Approximate Gain

1. Antenna to 6SA7 grid..... 8 at 600 kc
2. 6SA7 grid to plate (conversion 600 to 455 kc)..... 4
3. 6SA7 plate to 6SK7 grid..... 1 at 455 kc
4. 6SK7 grid to plate..... 80 at 455 kc
5. 6SK7 plate to 6SQ7 diode..... .7 at 455 kc

(B) A.F. Gain (A.F. Channel)

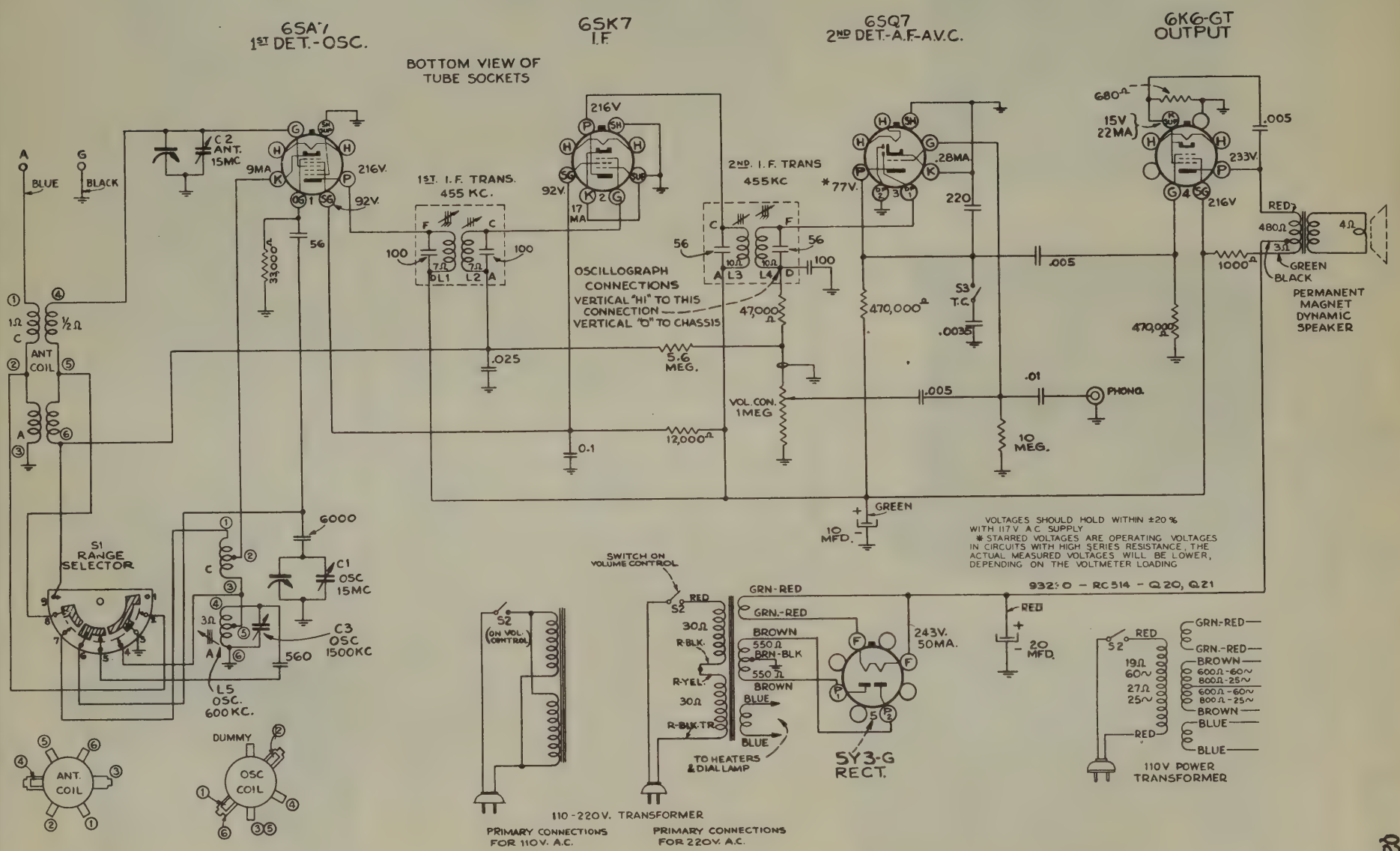
1. 6SQ7 grid to plate..... 50 at 400 cycles
2. 6K6GT grid to plate..... 10 at 400 cycles

(C) Oscillator Grid (OG-6SA7) Voltage — (Electronic Volt. Meter)

1. Oscillator Voltage at 600 kc..... —12V
2. Oscillator Voltage at 1,500 kc..... —16V
3. Oscillator Voltage at 4.5 mc..... — 5V
4. Oscillator Voltage at 15 mc..... — 9V

(D) A.V.C. Voltage — (Electronic Volt. Meter)

With 0.2V. input to antenna at 600 kc..... —15V



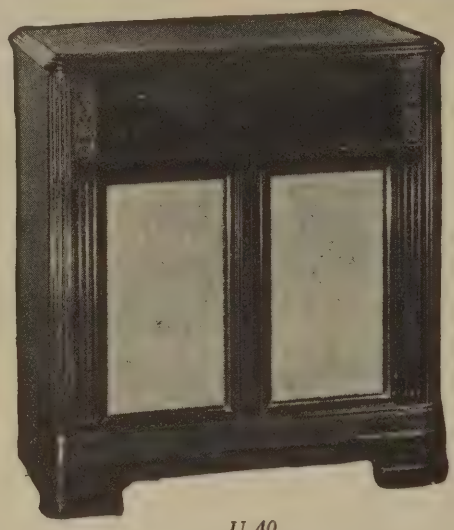

*Schematic Circuit Diagram*

# MODELS U-20, U-40, U-42 and U-43

**Chassis No. RC-498, RC-498A, RC-498B RC-498E**

## Seven- and Eight-Tube, Electric-Tuning, A-C, Superheterodynes

*U-20*



*U-40*

*U-42*

## Electrical and Mechanical Specifications

LOUDSPEAKER (RL-70-K1)

Diameter ..... 12 inch
Voice-Coil Impedance at 400 cycles..... 2.2 ohms

TUBE COMPLEMENT

(1) 6SA7 ..... First Detector, Oscillator
(2) 6K7 ..... I-F Amplifier
(3) 6SQ7 ..... Second Det., A.V.C.
(4) 6SF5 ..... Phase Inverter
(5) 6F6G except some RC-498B use 6K6G..... Output
(6) 6F6G except some RC-498B use 6K6G..... Output
(7) 5Y3G in RC-498 and RC-498A..... Rectifier
(7) 6U5 in RC-498B ..... Tuning Eye
(8) 5Y3G in RC-498B ..... Rectifier

POWER OUTPUT

Undistorted..... 5 watts, Maximum.....6 watts

POWER SUPPLY RATINGS (U-20)

A-6..... 105-125 volts, 60 cycles, 110 watts total
A-5..... 105-125 volts, 50 cycles, 110 watts total
B-2..... 105-125 volts, 25 cycles, 110 watts total
C-6..... 105-125/210-250 volts, 60 cycles, 110 watts total
C-5..... 105-125/210-250 volts, 50 cycles, 110 watts total

POWER SUPPLY RATINGS (U-40, U-42, **U-43**)

A-6..... 105-125 volts, 60 cycles, 110 watts total
A-5..... 105-125 volts, 50 cycles, 110 watts total
B-2..... 105-125 volts, 25 cycles, 110 watts total
C-6..... 105-130/140-160/200-250 volts, 60 cycles, 110 watts total
C-5..... 105-130/140-160/200-250 volts, 50 cycles, 110 watts total

Frequency Range..... 540 to 1,560 kc and 5.8 to 18 mc.

| | U-20 | U-40 | U-42 |
|---|---|---|---|
| Height..... | 38 inches | 33 inches | 42½ inches |
| Width..... | 25½ inches | 30 inches | 30 inches |
| Depth..... | 15 inches | 16¼ inches | 17 inches |
| Net Weight..... | 64 pounds | 90 pounds | 95 pounds |
| Shipping Weight. | 79 pounds | 115 pounds | 120 pounds |

Tuning Drive Ratio..... 10 to 1

PHONOGRAPH U-20

Type ..... Manual

PHONOGRAPH U-40, U-42 **U-43**

Type ..... Automatic
Record Capacity..... Eight 10-inch or seven 12-inch

**For Phonograph Service Data Refer to RP-139A, RP-145**

MODEL U-43

## Specifications MODEL U-43 ONLY

TUBE COMPLEMENT

(1) RCA-6SA7 ... 1st Detector-Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd Detector, AVC, and A-F
(4) RCA-6SF5 ..... Phase Inverter
(5) RCA-6K6GT ..... Power Output
(6) RCA-6K6GT ..... Power Output
(7) RCA-5Y3G ..... Rectifier
(8) RCA-6U5/6G5 ..... Tuning Indicator

LOUDSPEAKER (RL70L1)

Type ..... 12 inch electrodynamic
Voice Coil Impedance at 400 cycles .2.2 ohms

| Dimensions | Cabinet |
|---|---|
| Height (inches) ..... | 34 .. |
| Width (inches) ..... | 32 .. |
| Depth (inches) ..... | 16¼ ... |

Tuning Drive Ratio .. 10 to 1
Weight ..... 80 lbs (net)
110 lbs. (shipping)

## Alignment Procedure

**Before proceeding with alignment the following lead dress should be carefully checked.**

1. Dress AC switch leads away from 6SF5 tube socket.

2. Do not twist loop leads together or around each other. Spacing between leads from "C" band loop to chassis is important—see alignment step "5" below.

3. "High side" leads from loop sockets, range switch, oscillator coil, and trimmers must be dressed away from chassis and each other.

4. Dress C-6 and C-33 away from each other.

5. Dress C-17 away from power switch leads.

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown on the chassis schematics.

**Output Meter Alignment.**—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

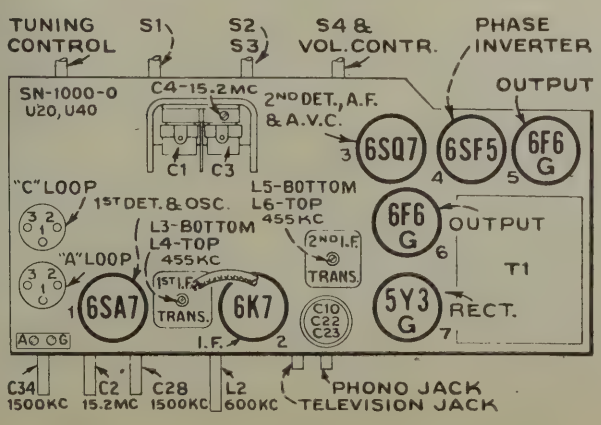
For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect test-osc. output to— | Tune test-osc. to— | Turn radio dial to | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I-F grid through 0.1 mfd capacitor and ground | 455 kc | Quiet point between 1,720-1,500 kc | L5 and L6 (2nd I-F trans.) |
| 2 | 1st det. grid through 0.1 mfd capacitor and ground | | | L3 and L4 (1st I-F trans.) |
| 3 | | 15.2 mc | 15.2 mc | C-4 oscillator* |
| 4 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 15.2 mc | Rock at 15.2 mc | C-2 antenna† while rocking |
| 5 | | 6.1 mc | 6.1 mc | Spacing between leads from "C" band loop to chassis |
| 6 | | 15.2 mc | Rock at 15.2 mc | C-2 antenna† while rocking |
| 7 | | 1,500 kc | 1,500 kc | C-34 antenna C-28 oscillator |
| 8 | | 600 kc | Rock at 600 kc | L-2 oscillator while rocking |
| 9 | | 1,500 kc | 1,500 kc | C-34 antenna C-28 oscillator |

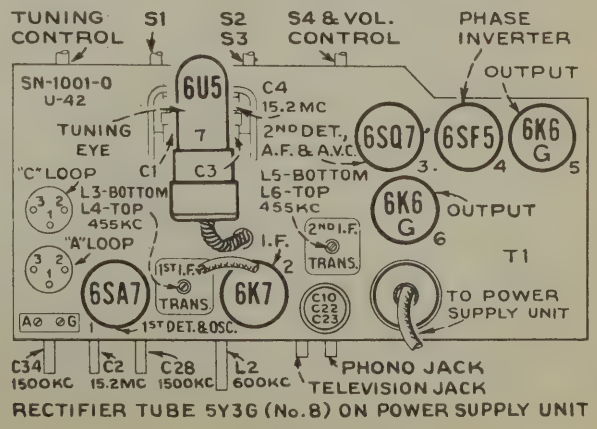
When making adjustments 4 to 9 inclusive the chassis must be in the cabinet, both loops connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

† If two peaks can be obtained use low frequency (maximum capacity) peak.




*U-20 and U-40 Tube and Trimmer Locations*

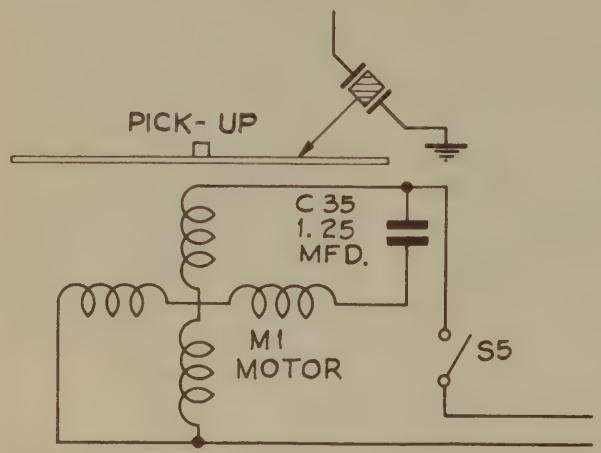



*U-42 Tube and Trimmer Locations*

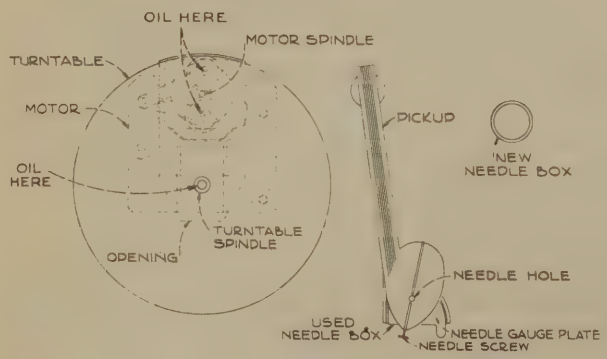
## Phonograph Information

The U-20 phonograph motor has its bearing filled with oil and sealed at the factory and hence should not require lubrication in the field. However the two rubber tired idler pulleys should have their bearings lubricated occasionally with S.A.E. 10 oil. Care should be taken not to get any oil, grease, or other foreign matter on the rubber tires. These tires and the motor spindle should be cleaned occasionally with quick drying naphtha.

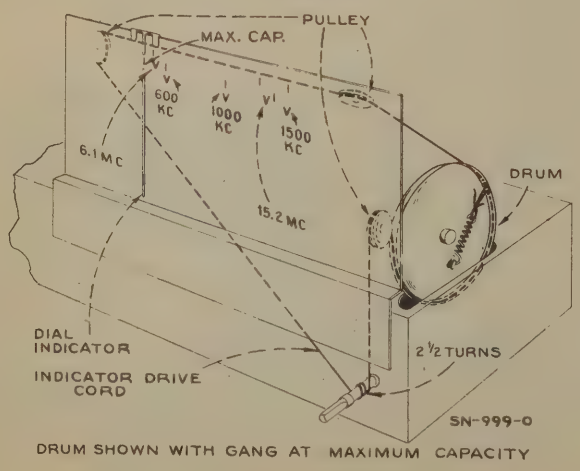
The turntable spindle bearing should also be lubricated occasionally with S.A.E. 10 oil.




*U-20 Motor*




*U-20 Motorboard*




*Dial-Indicator and Drive Mechanism*

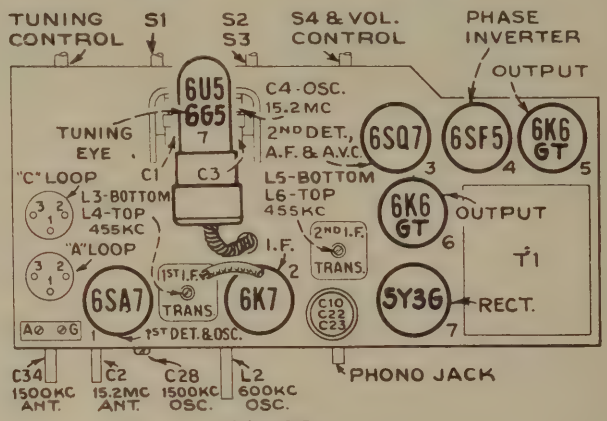
Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

## U-20

**Turntable Wobble:**

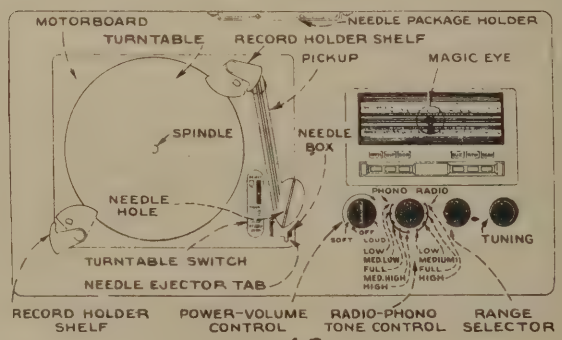
Turntables (Stock No. 33899) found to have excessive wobble (vertical run-out) may be trued-up in the following manner:

(a) Obtain a motor bearing, Stock No. 31046 (used in R93-B) and clamp same securely in a vise.
(b) Place turntable spindle in this bearing and make sure that turntable spins freely.
(c) With turntable spinning, the high side can readily be determined by use of a piece of chalk carefully lowered so that it just touches the high spot of the turntable, leaving a mark.
(d) With both hands grasp the rim of the turntable, thumbs on top and index fingers underneath turntable at the center of the chalk mark.
(e) Apply a moderate amount of pressure in a downward direction at right angle to the jaws of the vise.
(f) Spin turntable again and if still running out, repeat operation mentioned under (c), continuing by trial until turntable runs true.

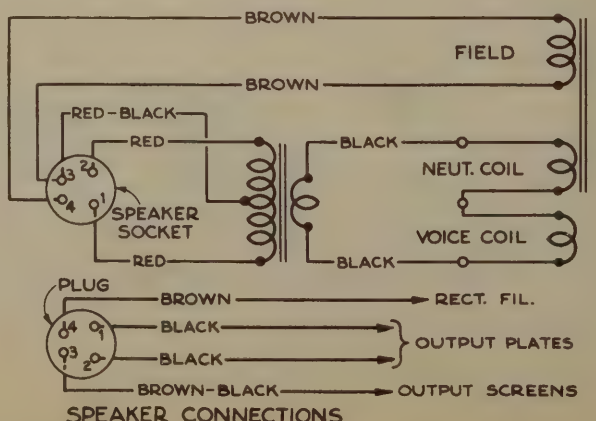



**U-43**

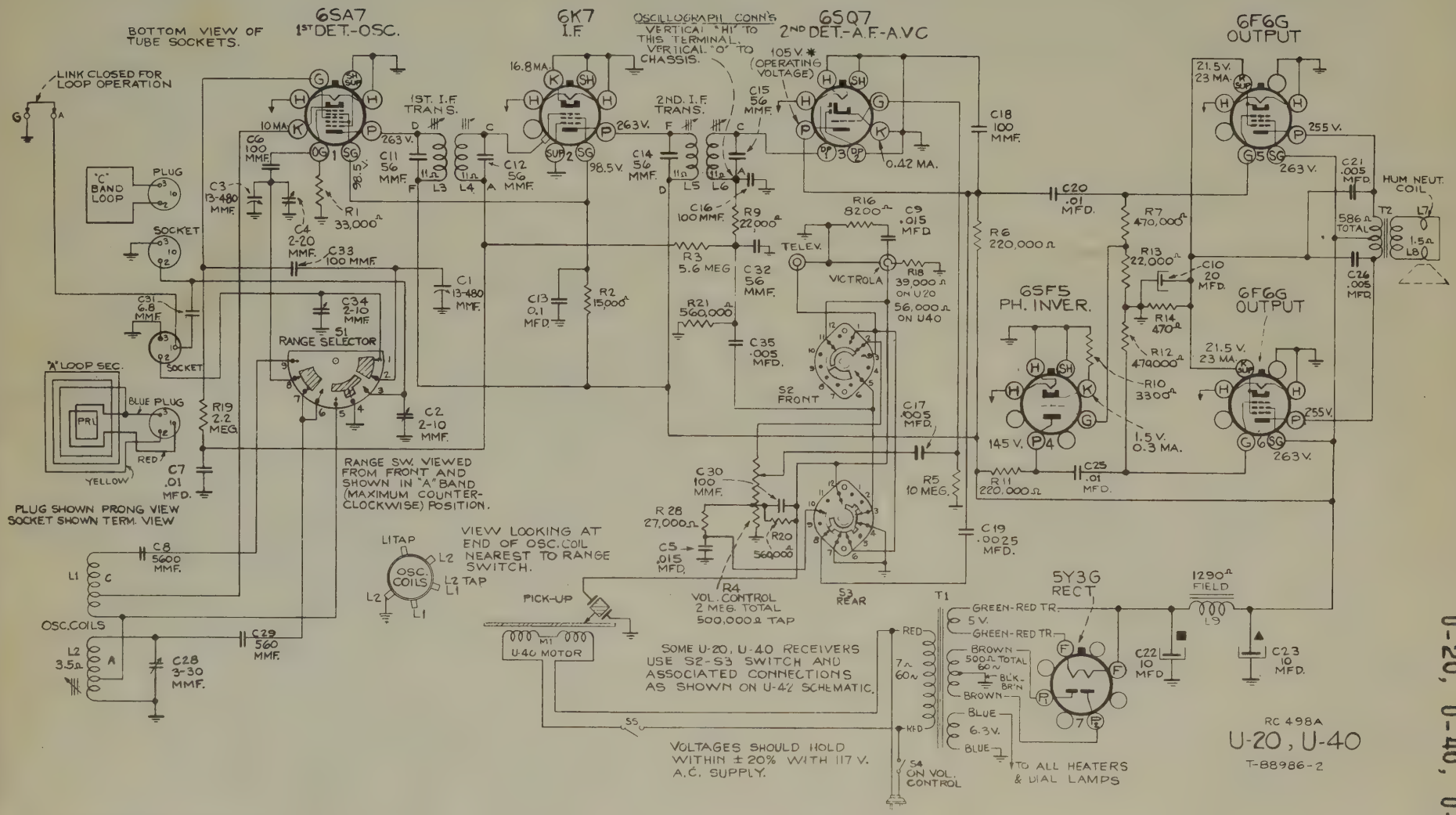
*Tube and Trimmer Locations*




**U-43**



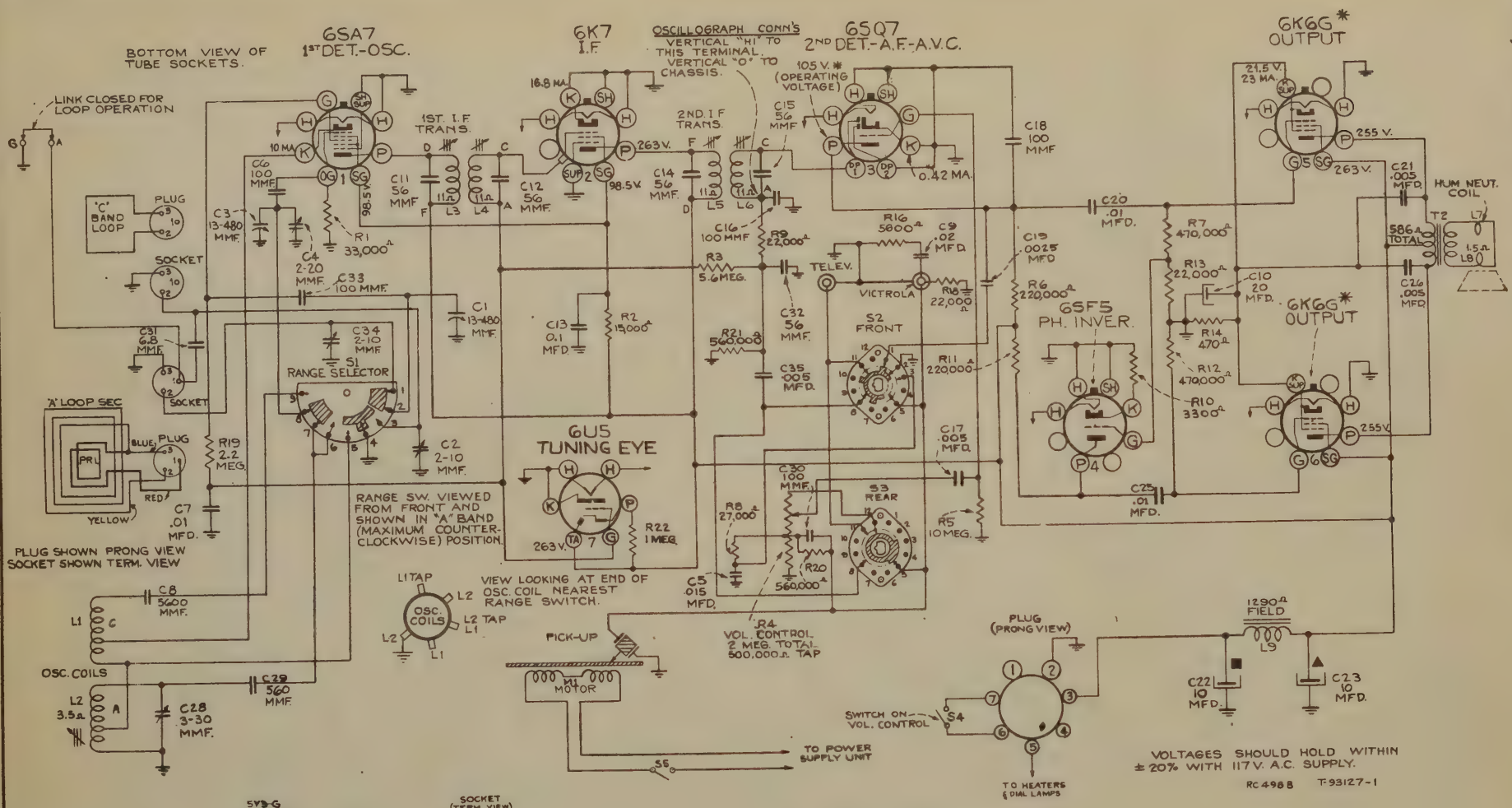

SPEAKER CONNECTIONS




*U-20 and U-40 Schematic*

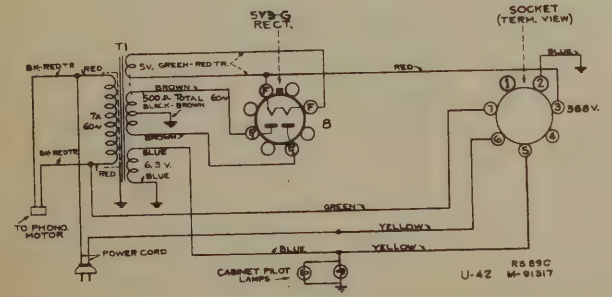
**Compensation Change:**

In some production, R16 is changed from 8,200 ohms to 3,900 ohms (Stock No. 12955).




U-42

*U-42 Schematic*

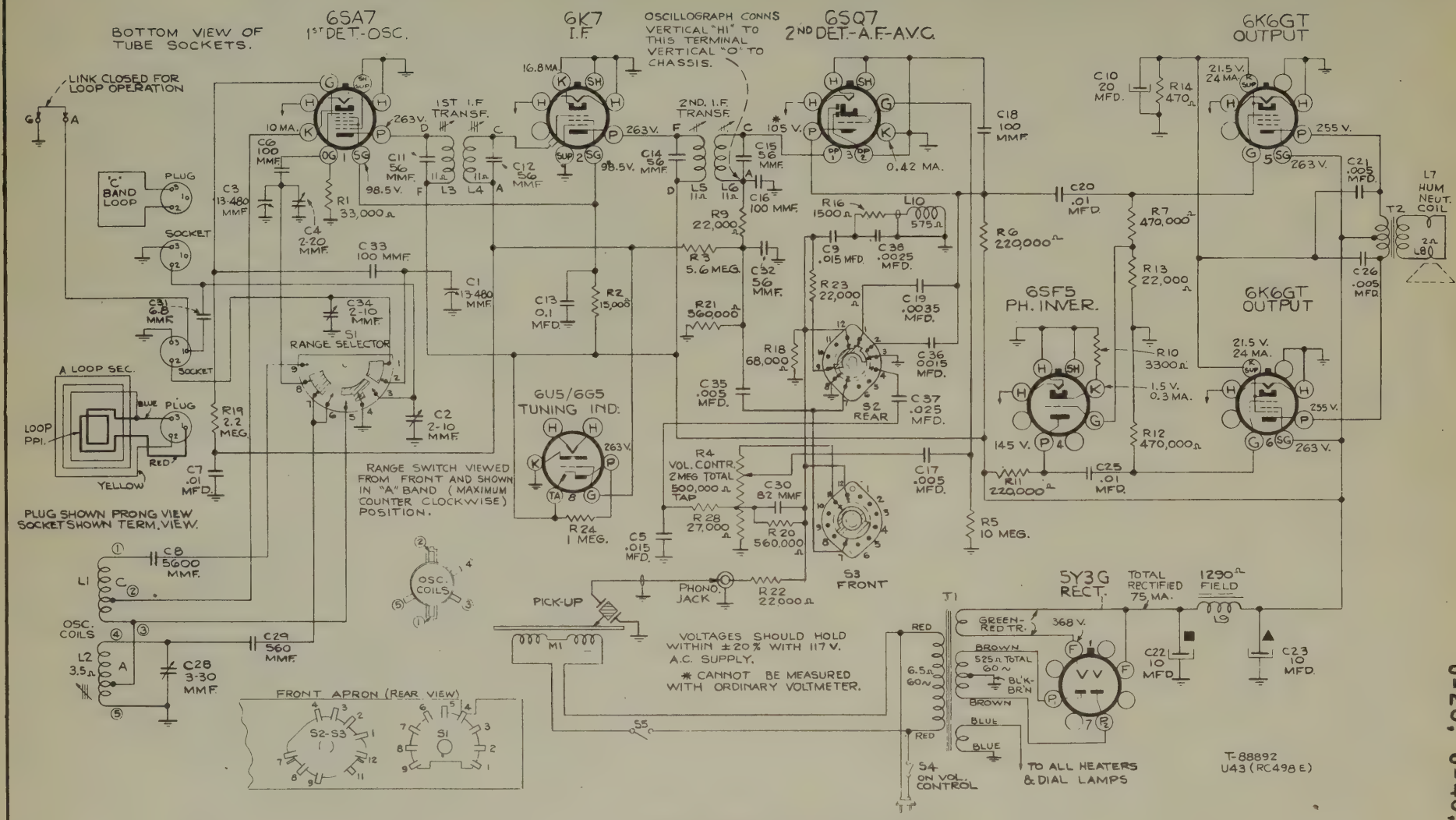



*U-42 S.P.U*

* Note.—Some U-42 instruments employ 6F6G output tubes. Both types are interchangeable. On some Models U-42, R18 is 27,000 ohms.

**Compensation Change:**

In some production, R16 is changed from 600 ohms to 2,700 ohms (Stock No. 14024).




*Schematic Circuit Diagram* **U-43**

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 33719 | Belt—Push button station setting belt (Models U-40, U-42) |
| 34724 | Board—"Antenna-Ground" board |
| 30766 | Cap—Rubber cap for "Magic Eye" (Model U-42) |
| 34725 | Capacitor—Trimmer comprising 1 section of 3-30 mmfd. and 2 sections of 2-10 mmfd. (Models U-20, U-42) (C2, C4, C28) |
| 34852 | Capacitor—Trimmer comprising 1 section of 3-30 mmfd. and 2 sections of 2-10 mmfd. (Model U-40) (C2, C4, C28) |
| 14079 | Capacitor—6.8 mmfd. (C31) |
| 12723 | Capacitor—56 mmfd. (C32) |
| 30949 | Capacitor—56 mmfd. (C11, C12, C14, C15) |
| 12720 | Capacitor—100 mmfd. (C6, C16, C18, C30, C33) |
| 12537 | Capacitor—560 mmfd. (C29) |
| 13895 | Capacitor—5,600 mmfd. (C8) |
| 34459 | Capacitor—.0025 mfd. (C19) |
| 33584 | Capacitor—.005 mfd. (C17, C21, C35) |
| 4937 | Capacitor—.01 mfd. (C7, C20, C25) |
| 11315 | Capacitor—.015 mfd. (C5, C9) (C9 Models U-20 and U-40 only) |
| 32785 | Capacitor—.02 mfd. (C9) model U-42 only |
| 4839 | Capacitor—0.1 mfd. (C13) |
| 32240 | Capacitor—Electrolytic comprising 2 sections of 10 mfd. and 1 section of 20 mfd. (C10, C22, C23) |
| 34285 | Clip—"Magic Eye" clip (Model U-42) |
| 32707 | Coil—Oscillator coil (L1, L2) |
| 34721 | Control—Volume control and power switch (R4, S4) |
| 32634 | Cord—Tuning condenser drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil (Models U-20, U-42) |
| 34853 | Core—Adjustable core and stud for oscillator coil (Model U-40) |
| 33633 | Indicator—Station selector indicator |
| 34407 | Plate—Dial plate less condenser (Models U-40, U-20) |
| 34798 | Plate—Dial plate complete less tuner and push button (Model U-42) |
| 30868 | Plug—2-contact female plug for motor lead (Models U-20, U-40) |
| 5040 | Plug—4-contact female plug for speaker leads |
| 14404 | Plug—7-contact female plug for battery cable (Model U-42) |
| 30546 | Resistor—470 ohms, ½ watt (R14) |
| 12312 | Resistor—3,300 ohms, ½ watt (R10) |
| 13714 | Resistor—5,600 ohms, ½ watt (R16) (Model U-42 only) |
| 14075 | Resistor—8,200 ohms, ½ watt (R16) (Model U-20 and U-40 only) |
| 13998 | Resistor—22,000 ohms, ½ watt (R9, R13) |
| 12738 | Resistor—27,000 ohms, ½ watt (R8, R18) (some models U-42 only) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12266 | Resistor—39,000 ohms, ½ watt (R18) (Model U-20 only) |
| 12286 | Resistor—56,000 ohms, ½ watt (R18) (Model U-40 only) |
| 12264 | Resistor—220,000 ohms, ½ watt (R6, R11) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7, R12) |
| 12486 | Resistor—560,000 ohms, ½ watt (R20, R21) |
| 12013 | Resistor—1 megohm, 1/10 watt (R22) (U-42 only) |
| 12679 | Resistor—2.2 megohm, ½ watt (R19) |
| 11668 | Resistor—5.6 megohm, ½ watt (R3) |
| 13601 | Resistor—10 megohm, ½ watt (R5) |
| 33735 | Screw—Push arm adjusting screw |
| 34411 | Shaft—Tuning condenser drive shaft |
| 31364 | Socket—Dial lamp socket |
| 34799 | Socket—"Magic Eye" socket (Model U-42) |
| 33514 | Socket—Phonograph input socket |
| 31319 | Socket—Tube socket |
| 34726 | Spring—Push arm return spring .018 dia. wire. |
| 33720 | Spring—Push arm return spring (Model U-42). |
| 34720 | Switch—Radio, Phono, Television, Tone switch (S2, S3) |
| 34722 | Switch—Range switch (S1) |
| 32263 | Transformer—1st i.f. transformer (L3, L4, C11, C12) |
| 34719 | Transformer—2nd i.f. transformer (L5, L6, C14, C15) |
| 33726 | Washer—Retaining washer for shaft, Stock No. 34411 |
| | **PICKUP AND ARM ASSEMBLIES U-20** |
| 33906 | Arm—Pickup arm—shell only |
| 33908 | Base—Pickup support arm base and retainer |
| 33905 | Crystal—Pickup crystal cartridge |
| 33907 | Support—Pickup support arm complete—less base |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES U-20** |
| 34416 | Arm—Drive wheel support arm (long) |
| 34415 | Arm—Idler wheel support arm (short) |
| 34516 | Armature—Motor armature complete |
| 34515 | Bushing—Motor mounting rubber bushings |
| 34413 | Capacitor—1.25 mfd., 60 cycle motor starting capacitor for motor, Stock No. 34412 (C35). |
| 34514 | Cover—Bakelite top end shell for motor |
| 34414 | Idler—Rubber tired idler or drive wheel |
| 34412 | Motor—105-125 volt, 60 cycle phono. motor—less pulleys, capacitor and motor cradle (M1). |
| 34418 | Plate—Motor support plate complete with turntable bearing |
| 14887 | Retainer—Idler wheel retainer spring |
| 34437 | Spindle—Turntable spindle |
| 34417 | Spring—Idler arm tension spring |
| | **AUTOMATIC SWITCH ASSEMBLIES U-20** |
| 34419 | Base—Pickup arm mounting base |
| 32865 | Bracket—Switch bracket and terminal board |
| 34308 | Cam—Switch cam assembly with spring |
| 32864 | Lever—Switch actuating lever, roller, and clip. |
| 34309 | Mounting—Pickup arm base mounting (rubber grommet, washers, and nut) |
| 34311 | Ring—Retaining ring for pickup arm pivot shaft |
| 14195 | Screw—No. 10-32 x 5/16 set screw for switch cam hub |
| 34314 | Shaft—Pickup arm pivot shaft—for crystal pick-up |
| 34310 | Spool—Insulating spool for switch leads |
| 32868 | Spring—Switch lever spring |
| 32867 | Spring—Tension spring for switch cam |
| 32866 | Switch—Mercury tube and leads (S5) |
| 31608 | Washer—Retaining washer for switch lever |
| | **POWER SUPPLY ASSEMBLIES U-42** |
| 30868 | Plug—2-contact female plug for motor leads |
| 14409 | Plug—7-contact plug for power supply cable |
| 31319 | Socket—Tube socket |
| 32144 | Transformer—Power transformer, 105-120 volts, 50-60 cycles |
| | **SPEAKER ASSEMBLIES (RL-70K1)** |
| 31825 | Cap—Dust cap |
| 34705 | Cone—Cone complete with voice coil (L8) |
| 34728 | Diffuser—Speaker diffuser |
| 5039 | Plug—4-prong speaker plug |
| 34727 | Speaker—12-inch dynamic complete with cone and voice coil—less output transformer and plug |
| 33444 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33731 | Button—Push button |
| 33730 | Clamp—Dial clamp (Model U-20) |
| 31456 | Cover—Protective cover for markers (Models U-20, U-42) |
| 33910 | Cup—Needle cup (Model U-20) |
| 33909 | Cup—Used needle cup (Model U-20) |
| 34730 | Dial—Glass dial scale (Models U-40, U-20) |
| 34867 | Dial—Glass dial scale (Model U-42) |
| 34420 | Escutcheon—Dial scale and push button escutcheon |
| 34583 | Frame—"C" band antenna loop frame |
| 34792 | Gasket—Rubber gasket for motorboard (Model U-42) |
| 30698 | Hinge—Lid hinge (Model U-20) |
| 34871 | Hinge—Door hinge—L.H. for 1 door (Model U-42) |
| 34870 | Hinge—Door hinge—R.H. for 1 door (Model U-42) |
| 13103 | Jewel—Pilot lamp jewel (Models U-40, U-42) |
| 33434 | Knob—Tuning tone control, range switch or volume control and power switch knob |
| 31480 | Lamp—Dial lamp (Model U-42) |
| 34800 | Loop—"A" band loop antenna (Model U-20). |
| 34729 | Loop—Antenna loop (Model U-40) |
| 34868 | Loop—Antenna loop for "A" band (Model U-42) |
| 33973 | Marker—Station selector push button markers (Model U-20) |
| 34866 | Marker—Station markers (Model U-42) |
| 34872 | Pin—Complete set of dowel pins for antenna loop (Model U-42) |
| 30870 | Plug—2-prong male connector for motor lead (Model U-20) |
| 32641 | Plug—3-prong plugs for antenna loops (Model U-20) |
| 32641 | Plug—3-prong male plug for loops (Models U-40, U-42) |
| 31048 | Plug—Phono plug for pickup lead (Model U-20) |
| 34869 | Pull—Door pull (Model U-42) |
| 35172 | Rubber—Sponge rubber strip for doors |
| 32870 | Screen—Compartment lamp screen (Models U-40, U-42) |
| 31364 | Socket—Dial lamp socket (Model U-42) |
| 14270 | Spring—Retaining spring for knob, Stock No. 33434 |
| 31470 | Spring—Motorboard spring mounting hardware (Models U-40, U-42) |
| 30900 | Spring—Retaining spring for button, Stock No. 33731 |
| 34423 | Support—Lid support (Model U-20) |
| 34422 | Turntable—Phonograph turntable less spindle (Model U-20) |

## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Set the radio-phono switch to "radio" position and accurately tune in the station for which the first button is to be set.

3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

6. Insert the station marker tabs in the recesses above the push-buttons.

### MODEL U-20

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 11765 | Lamp—Dial lamp |
| 11763 | Receptacle—Needle card holder |
| 35595 | Resistor—15,000 ohms, 3 watts (R2) |
| 30585 | Spring—Drive cord spring |
| 34723 | Socket—3-contact socket for loop |
| 34261 | Transformer — Power transformer, 105-120 volts, 50-60 cycles |

**Add the following for 50 cycle, 105-125 volt motor for Model U-20:**

Same as used for 105-125 volt, 60 cycle motor, except **less** 34514 cover, 34516 motor cover, and 34412 armature, and add:

| | |
|---|---|
| 35605 | Armature — Complete for 105-125 volt, 50 cycle motor |
| 35604 | Motor—105-125 volt, 50 cycle phono motor, less pulleys, capacitor, and motor cradle |

### MODEL U-40

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 11765 | Lamp—Dial lamp |
| 33973 | Markers—Station markers |
| 11763 | Receptacle—Needle card holder |
| 35595 | Resistor—15,000 ohms, 3 watts (R2) |
| 34723 | Socket—3-contact socket for loop |
| 30585 | Spring—Drive cord spring |
| 31478 | Support—Lid support |
| 34261 | Transformer — Power transformer 105-120 volts, 50-60 cycles |
| 31445 | Transformer — Power transformer. 105-120 volts, 25 cycles |

### MODEL U-42

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 11765 | Lamp—Dial lamp |
| 11763 | Receptacle—Needle card holder |
| 35595 | Resistor—15,000 ohms, 3 watts (R2) |
| 34723 | Socket—3-contact socket for loop |
| 30585 | Spring—Drive cord spring |
| 31445 | Transformer—Power transformer, 105-125 volts, 25 cycles |

### MODEL U-43

**Capacitor Added:**

In Model U-43, a 0.1 mfd. capacitor (Stock No. 4839) is added in shunt to electrolytic capacitor C23.

**Add Stock No.**

35595 Resistor—15,000 ohms, 3 watts (R2)

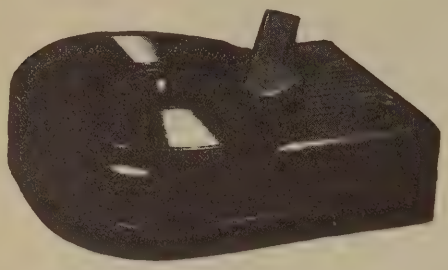
## Replacement Parts MODEL U-43

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

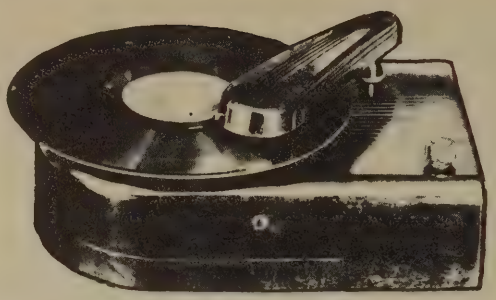
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-498E)** |
| 33719 | Belt—Push button station setting belt |
| 34724 | Board—"Antenna-Ground" board |
| 30766 | Cap—Rubber cap for tuning indicator |
| 34852 | Capacitor — Trimmer — comprising 1 section of 3-30 mmfd. and 2 sections of 2-10 mmfd. (C2, C4, C28) |
| 12813 | Capacitor—82 mmfd. (C30) |
| 12720 | Capacitor—100 mmfd. (C6, C16, C18, C33) |
| 33806 | Capacitor—.0015 mfd. (C36) |
| 34459 | Capacitor—.0025 mfd. (C38) |
| 30303 | Capacitor—.0035 mfd. (C19) |
| 4870 | Capacitor—.025 mfd. (C37) |
| 32240 | Capacitor—Electrolytic—comprising 2 sections of 10 mfd. and 1 section of 20 mfd. (C10, C22, C23) |
| 34285 | Clip—Clip and thumb screw for tuning indicator |
| 35739 | Coil—Choke coil |
| 32707 | Coil—Oscillator coil (L1, L2) |
| 35738 | Control—Tone control |
| 34721 | Control—Volume control and power switch (R4, S4) |
| 32634 | Cord—Tuning condenser drive cord |
| 34853 | Core—Adjustable core and stud for oscillator coil |
| 33633 | Indicator—Station selector indicator |
| 11891 | Lamp—Dial lamp |
| 35737 | Plate—Dial plate |
| 30868 | Plug—2-contact female plug for motor lead |
| 5040 | Plug—4-contact female plug for speaker leads |
| 14499 | Resistor—1,500 ohms, ½ watt (R16) |
| 13998 | Resistor—22,000 ohms, ½ watt (R9, R13, R22, R23) |
| 12738 | Resistor—27,000 ohms, ½ watt (R8) |
| 13715 | Resistor—68,000 ohms, ½ watt (R18) |
| 12013 | Resistor—1 meg., 1/10 watt (R24) |
| 33735 | Screw—Push arm adjusting screw |
| 34411 | Shaft—Tuning condenser drive shaft |
| 34723 | Socket—3-contact socket for antenna loop |
| 31364 | Socket—Dial lamp socket |
| 33742 | Socket—Phonograph input socket |
| 13871 | Socket—Tuning indicator socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 34726 | Spring—Push arm return spring, .018 dia. wire. |
| 34722 | Switch—Range switch (S1) |
| 32263 | Transformer—First i-f transformer (L3, L4, C11, C12) |
| 34719 | Transformer—Second i-f transformer (L5, L6, C14, C15) |
| 31445 | Transformer—Power transformer, 100-120 volts, 25-60 cycle |
| 34261 | Transformer—Power transformer, 105-120 volts, 50-60 cycle (T1) |
| 33726 | Washer—Retaining washer for shaft—Stock No. 34411 |
| | **RECORD CHANGER PARTS** |
| | See RP-139A—110 volts, 25-50 cycle<br>RP-145 —110 volts, 60 cycle |
| | **SPEAKER ASSEMBLIES (RL-70L1)** |
| 13867 | Cap—Dust cap |
| 12012 | Coil—Field coil |
| 35616 | Cone—Cone complete with voice coil |
| 34728 | Diffuser—Speaker diffuser |
| 5039 | Plug—4-prong male speaker plug |
| 33444 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35563 | Button—Push button |
| 31456 | Cover—Protective covers for markers |
| 35468 | Decalcomania—Caution decal for record changer |
| 35742 | Decalcomania—Control decal |
| 35592 | Decalcomania—Control decal |
| 35741 | Decalcomania—"RCA-Victrola" decal |
| 35565 | Dial—Glass dial scale |
| 35564 | Escutcheon — Dial scale and push button escutcheon |
| 34583 | Frame—"C" band antenna loop frame |
| 30698 | Hinge—Cabinet lid hinge |
| 13103 | Jewel—Pilot lamp jewel |
| 34998 | Knob—Tuning, volume control, and power switch, range switch or tone control knob |
| 34729 | Loop—Antenna loop |
| 33973 | Marker—Station selector push button markers |
| 32641 | Plug—3-prong plug for antenna loops |
| 35832 | Pull—Door pull |
| 11763 | Receptacle—Needle card holder |
| 35172 | Rubber—Sponge rubber strip for doors |
| 35740 | Shade—Compartment lamp shade |
| 14270 | Spring—Retaining spring for knob — Stock No. 34998 |
| 31470 | Spring—Motorboard spring mounting hardware. |
| 30900 | Spring—Retaining spring for button—Stock No. 35563 |
| 35831 | Support—Lid support—L. H. |
| 35830 | Support—Lid support—R. H. |

# MODELS VA-20 and VA-21

## Two-Tube, A-C, Wireless Record Players



MODEL VA-20



MODEL VA-21

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 530-625 kc

TUBE COMPLEMENT

(1) RCA-6A8 ..... Modulator-Oscillator
(2) RCA-25Z6-G ..... Half-Wave Rectifier
Dial Lamp ..... Mazda 47, 6-8 volts, .15 amp.

POWER SUPPLY RATINGS

A-6 ..... 105-125 volts, 60 cycles, 50 watts
A-5 ..... 105-125 volts, 50 cycles, 50 watts

MOTOR

Type ..... Synchronous (Manual Starting)
Turntable Speed ..... 78 r.p.m.

PICKUP

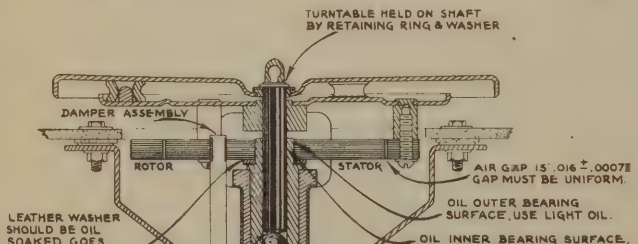
Type ..... Crystal
Pickup Impedance ..... 100,000 ohms at 1000 cycles
Average Output Voltage ..... 1½ volts at 1000 cycles with 250,000 ohm load.

CABINET DIMENSIONS

Height ..... 3⅜ inches
Width ..... 12½ inches
Depth ..... 8¼ inches
Over-All Height ..... 5 inches
Turntable Diameter ..... 7 inches
Weight 7¼ lbs. (net), 9¼ lbs. (shipping)

## Set-Up Procedure

1. Insert plug in power supply outlet, and turn the power-switch—volume control knob on top of VA-20 to full clockwise position. Start a record on the VA-20. The motor is a synchronous manual-starting type, and requires a clockwise spin to start.
2. Tune the radio receiving set to a quiet point between 530-625 kc.
3. Tune the oscillator in the VA-20 to this frequency by adjusting the button on the rear of the VA-20 cabinet to obtain peak output on the receiver. Clockwise rotation decreases the frequency; counter-clockwise rotation increases the frequency.
4. Adjust the radio volume control for the highest volume that is likely to be required, and then use the VA-20 volume control for further adjustment.
5. In noisy locations, it may be desirable to leave the VA-20 volume control turned full clockwise, and regulate the radio volume control for the desired level.
6. If there is insufficient volume, or excessive noise, the remedy is to couple the VA-20 to the radio receiver, by running a piece


TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .0007" GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE, USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL INNER BEARING SURFACE, USE LIGHT OIL.
OIL BALL BEARING USE LIGHT OIL

of insulated wire between the two units: Wrap one end (three or four turns) around the antenna lead-in on the radio, and wrap the other end (three or four turns) around the short wire that projects from the plug on the power cord of the VA-20. With an RCA Master Antenna, wrap the wire around the counter-poise lead where it attaches to the receiver (terminal A3) or to the coupling unit (terminal B).

7. If the radio receiver has push-button tuning, one of the buttons may be set up to tune in the VA-20 oscillator frequency. This button should be marked "Record Player."

## Motor Data

Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

**Hum and Vibration.**—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

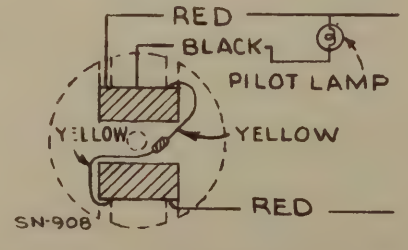
1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

*Note: Voltages with star (*) are operating voltages in circuits with high series resistance. The actual measured voltage will be lower, depending on the voltmeter loading. Voltages are measured to chassis, unless otherwise indicated. Values should hold within approximately ± 20% with 117-volt a-c supply.

## Precautionary Lead Dress

1. The power supply cord must be dressed between chassis and top of cabinet, away from grid of 6A8, and entirely away from 25Z6-G.
2. All leads to oscillator coil must be as short as possible.
3. All motor leads must be dressed away from rotor.
4. Pickup leads must be dressed away from the top grid of 6A8, and kept away from the 25Z6-G.

**Caution: Do not remove turntable from motor while power is turned on, as damage to the tubes will result.**




*50-Cycle Motor Coil Assembly and Connections*
*D-C resistance of each coil:*

105-125 volts, 60 cycles ..... 36 ohms
105-125 volts, 50 cycles ..... 40 ohms

# MODEL VA-20

### Over-Modulation or Distortion:

On some records, and particularly with pick-up units having relatively high voltage output, an occasional case may be encountered where distortion occurs at advanced volume control (VA-20) settings. This condition can be eliminated by effecting the following circuit changes:

Remove:

Self bias resistor R-2 and associated by-pass capacitor C-4 from cathode circuit of 6A8 modulator-oscillator stage.

Install:

(a) Connection between 6A8 cathode (K) and shell (SH) (or chassis).
(b) A 10 megohm resistor Stock No. 13601 between "modulator grid" and cathode (K) on 6A8 socket (or chassis).
(c) A .0025 mfd capacitor Stock No. 5107 in series with green lead from arm of volume control to "modulator grid."
(d) A 120,000 ohm resistor Stock No. 13734 across the volume control from terminal 1 to terminal 3.

The overmodulation condition can also be avoided by operating the VA-20 volume control at a retarded position, and regulating volume by means of the receiver control. The above changes however, effect a foolproof cure, and should be incorporated on any instruments being serviced. These changes are incorporated in later production instruments.

### Additional Replacement Parts:

Stock No.

33041 Ring—Retaining ring and metal washer to mount turntable plate
5107 Capacitor—.0025 mfd. capacitor (C10)
13734 Resistor—120,000 ohms (R8)
13601 Resistor—10 megohms (R7)

### Change in 50-Cycle VA-20:

Late production of 50-cycle models have a 110-volt motor, and a ballast resistor in series with the heater circuit as shown in the accompanying schematic. The following parts apply to the late 50-cycle instrument:

Stock No.

31034 Motor—110 volt, 50 cycle, less mounting
31037 Rotor—Turntable and rotor lamination assembly complete for 50-cycle operation
31043 Stator—Stator assembly complete with coils and laminations for 50-cycle operation
33484 Resistor—Ballast resistor, 1-24 ohm and 1-271 ohm sections for heater circuit (R10, R9)

### Motor Inter-Lock Switch:

An interlock switch has been added to motor base on these models, and is connected in series with the motor supply. This switch "opens" whenever the turntable is removed, and obviates tube damage. Replacement parts as listed in Service Notes apply except as noted below:

Omit Stock No.

31046 Bearing Assembly.....

Add Stock No.

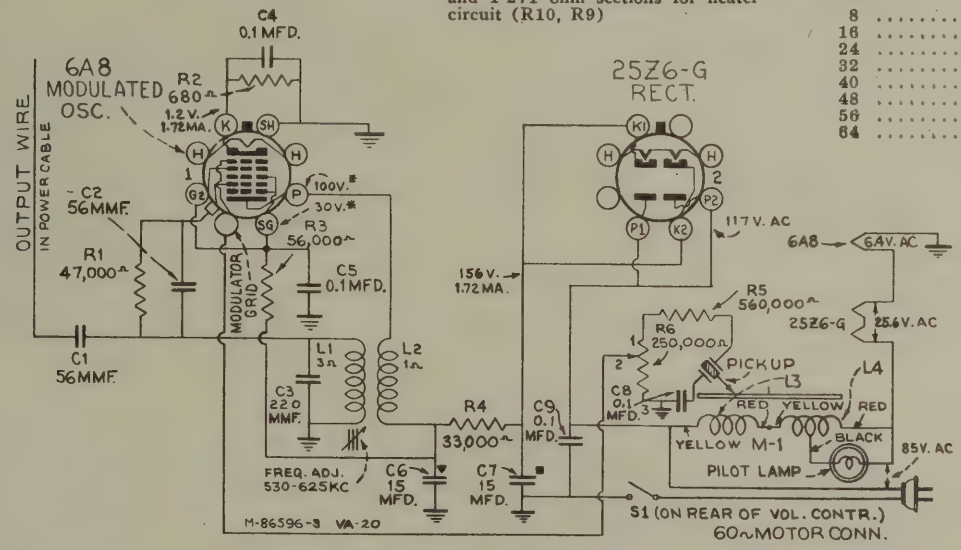
35003 Ball—Steel ball for rotor bearing...
35002 Bearing—Rotor bearing assembly—less ball.....
35004 Plunger—Hard rubber plunger for motor switch.....
35001 Switch—Motor switch complete.....

### Changing Frequency Range:

Should it be desirable to employ a different range of frequency on the VA-20 Wireless Record Player, this may be accomplished readily by removing turns from the oscillator coil.

The resultant frequency range for given number of removed turns are:

| Turns Removed | Frequency Range |
|---|---|
| 8 ..... | 580 kc - 710 kc |
| 16 ..... | 630 kc - 770 kc |
| 24 ..... | 700 kc - 850 kc |
| 32 ..... | 760 kc - 940 kc |
| 40 ..... | 850 kc - 1,050 kc |
| 48 ..... | 960 kc - 1,200 kc |
| 56 ..... | 1,100 kc - 1,400 kc |
| 64 ..... | 1,300 kc - 1,650 kc |




## Replacement Parts Model VA-20

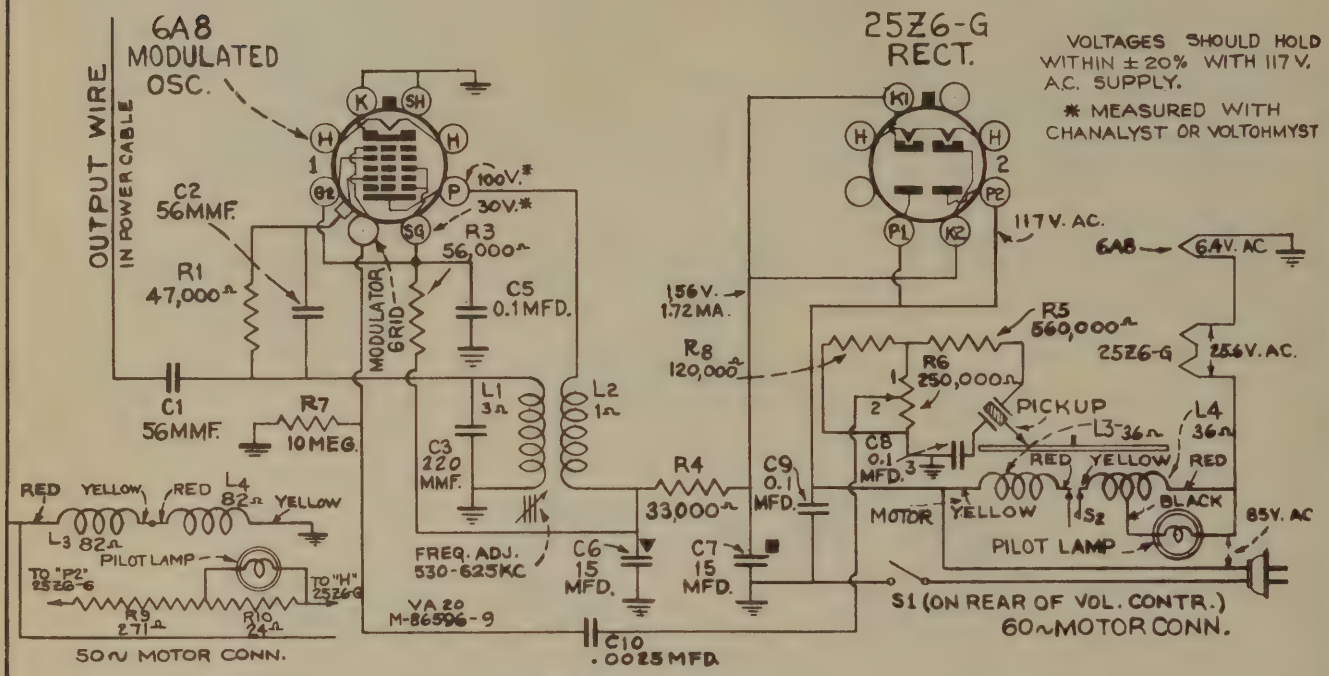
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MISCELLANEOUS ASSEMBLIES** |
| 13103 | Cap—Pilot lamp cap (bullseye) |
| 32642 | Cord—Power and output cord and plug |
| 31051 | Foot—Rubber foot for cabinet |
| 32611 | Knob—Special knob to adjust oscillator coil |
| 30885 | Knob—Volume control and switch knob |
| 31480 | Lamp—Pilot lamp |
| 31053 | Mounting—Motor mounting screws and washers complete |
| 32500 | Mounting—Pickup arm mounting ring and rubber cushion |
| 12993 | Screw—No. 8-32 x ¾-inch headless set screw for knob |
| 31365 | Socket—Pilot lamp socket |
| 32499 | Volume control and switch (R6, S1) |
| | **OSCILLATOR ASSEMBLIES** |
| 12723 | Capacitor—56 mmfd. (C1, C2) |
| 12694 | Capacitor—220 mmfd. (C3) |
| 4839 | Capacitor—0.1 mfd., 400 V. (C4, C5, C8, C9) |
| 32152 | Capacitor—15 mfd. (C6, C7) |
| 32501 | Coil—Oscillator coil (L1, L2) |
| 12262 | Resistor—680 ohms, ½ watt (R2) |
| 12454 | Resistor—33,000 ohms, ½ watt (R4) |
| 12412 | Resistor—47,000 ohms, ½ watt (R1) |
| 12286 | Resistor—56,000 ohms, ½ watt (R3) |
| 12486 | Resistor—560,000 ohms, ½ watt (R5) |
| 31251 | Socket—Tube socket |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES** |
| 32507 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Bearing assembly |
| 31041 | Cap—Rubber spindle cap |
| 32645 | Coil—Motor field coil for 85-volt, 50-cycle operation—less laminations |
| 32505 | Coil—Motor field coil for 85-volt, 60-cycle operation—less laminations |
| 31047 | Cushion—Rubber cushion for bearing |
| 32643 | Motor—85-volt, 50-cycle (M1) |
| 32508 | Motor—85-volt, 60-cycle (M1) |
| 31040 | Mountings—Turntable top rubber mountings sufficient for one turntable |
| 32644 | Rotor—Turntable plate and rotor lamination assembly complete for 50-cycle operation |
| 32506 | Rotor—Turntable plate and rotor lamination assembly complete for 60-cycle operation |
| 32917 | Stator—Stator laminations and field coils for 85-volt, 50-cycle operation |
| 32916 | Stator—Stator laminations and field coils for 85-volt, 60-cycle operation |
| 31039 | Turntable—Finished turntable top plate only—less rubber mountings |
| 4083 | Washer—Leather washer |
| 14231 | Washer—Metal spacing washer |
| | **PICKUP AND ARM ASSEMBLIES** |
| 31049 | Base—Pickup arm pivot shaft and base assembly |
| 31050 | Crystal—Pickup crystal and needle screw |
| 9842 | Pickup crystal and arm complete with mounting |
| 12539 | Screw—Pickup needle screw |

## REVISED MODEL VA-20 IS ELECTRICALLY IDENTICAL TO MODEL VA-21

(Including changes to prevent over modulation or distortion)




# MODEL VA-21

## Replacement Parts MODEL VA-21

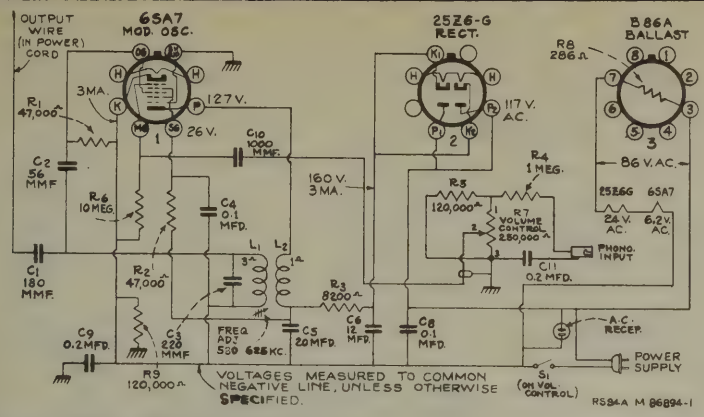
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MISCELLANEOUS ASSEMBLIES** |
| 13103 | Cap—Pilot lamp cap (bullseye) |
| 32642 | Cord—Power and output cord and plug |
| 35467 | Decalcomania—"RCA-Victrola" decal |
| 31051 | Foot—Rubber foot for cabinet |
| 32611 | Knob—Special knob to adjust oscillator coil |
| 30885 | Knob—Volume control and switch knob |
| 31480 | Lamp—Pilot lamp |
| 31053 | Mounting—Motor mounting screws and washers complete |
| 35609 | Mounting—Pickup mounting grommet, nut and lockwasher |
| 33484 | Resistor—One section 24 ohms, and one section 271 ohms (50 cycle) |
| 32317 | Screw—No. 8-32 x 7/32 headless set screw for knob |
| 31365 | Socket—Pilot lamp socket |
| 32499 | Volume control and switch (R6, S1) |
| 35004 | Plunger—Hard rubber plunger for switch on motor base |
| | **OSCILLATOR ASSEMBLIES** |
| 12723 | Capacitor—56 mmfd. (C1, C2) |
| 12694 | Capacitor—220 mmfd. (C3) |
| 5107 | Capacitor—.0025 mfd |
| 4839 | Capacitor—0.1 mfd., 400 volts (C5, C8, C9) |
| 32152 | Capacitor—15 mfd. (C6, C7) |
| 32501 | Coil—Oscillator coil (L1, L2) |
| 12454 | Resistor—33,000 ohms, ½ watt (R4) |
| 12412 | Resistor—47,000 ohms, ½ watt (R1) |
| 12286 | Resistor—56,000 ohms, ½ watt (R3) |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt (R5) |
| 13601 | Resistor—10 meg., ½ watt |
| 31251 | Socket—Tube socket |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES** |
| 32654 | Ball—Bearing ball only |
| 32507 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Bearing assembly |
| 31041 | Cap—Rubber spindle cap |
| 31918 | Coil—Motor field coil for 110 volts, 50 cycle |
| 32505 | Coil—Motor field coil for 110 volts, 60 cycle |
| 31047 | Cushion—Rubber cushion for bearing |
| 33653 | Frame—Rotor frame—50-60 cycle |
| 33354 | Lamination—Stator lamination—less coils—50 cycle |
| 34961 | Lamination—Stator lamination—less coils—60 cycle |
| 33656 | Lamination—Rotor lamination—60 cycle |
| 31034 | Motor—110 volts, 50 cycle (M1) less mounting |
| 32508 | Motor—110 volts, 60 cycle (M1) |
| 31040 | Mountings—Turntable top rubber mountings sufficient for one turntable |
| 31037 | Rotor—Turntable plate and rotor lamination assembly complete for 50 cycle operation |
| 31043 | Stator—Stator laminations and field coils for 110 volts, 50 cycle operation |
| 31039 | Turntable—Finished turntable top plate only—less rubber mountings |
| 4083 | Washer—Leather washer |
| 14231 | Washer—Metal spacing washer |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33591 | Arm—Pickup arm only—less cartridge, base and cable |
| 34481 | Arm—Pickup pivot arm and shaft |
| 34482 | Base—Pickup mounting base |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 34311 | Ring—Retaining ring for pivot shaft |
| 33529 | Screw—Needle screw |

# OSC-22

## Wireless Oscillator




FREQUENCY RANGE..... Approx. 530-625 kc
TUBE COMPLEMENT
(1) RCA-6SA7..... Modulator—Oscillator
(2) RCA-25Z6-G..... Half-Wave Rectifier
(3) Type B-86-A..... Ballast Resistor

POWER SUPPLY RATINGS
A-C Rating.... 105-125 volts, 25-60 cycles, 35 watts
D-C Rating..... 105-125 volts, 35 watts

DIMENSIONS
Chassis Base..... 7¼-in. x 4½-in x 2½-in.

**Precautionary Lead Dress.—**
1. Keep 110-volt leads away from oscillator coil.
2. Leads to oscillator coil must be short and direct.

The RCA Victor Wireless Oscillator is an adapter unit used to convert your Victrola Attachment, such as the RCA Victor Model VA-22, into a wireless record player. This permits you to play phonograph records through your radio receiver without any connecting wires from the Victrola Attachment to the Radio Receiver.

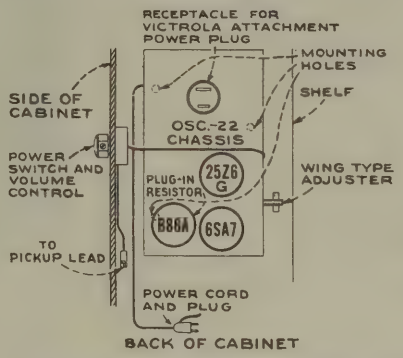
## INSTALLATION

Certain RCA Victrola Attachments such as the VA-22 are provided with a side shelf inside the cabinet for mounting the Wireless Oscillator. Three holes are drilled in the shelf correctly spaced for the oscillator mounting bolts to go through and screw into the holes in the OSC-22 chassis base. To install the OSC-22 first detach the VA-22 power cord from the electric outlet, then:

1. Look in the back of the VA-22 or similar Victrola cabinet and locate the connection from the pickup to the volume control on the side of the cabinet. This is a length of wire with a connector plug on one end. Disconnect the plug from the bayonet socket and then loosen the set screw and remove the knob and the volume control on the other end of the wire, together with the wire, from the VA-22 cabinet. It is attached to the cabinet by a nut and washer.
2. Mount the OSC-22 on the cabinet shelf with the three mounting screws and washers provided.
3. Mount the OSC-22 Power Switch and Volume Control unit in the location from which the VA-22 volume control was removed, using the washer and nut taken from the VA-22 volume control. Be sure that the locating pin on the new control is in the correct position. Attach knob on shaft of Power Switch and Volume Control unit and tighten up the set screw.
4. Insert the pickup plug into the connector on the cable of the newly installed Volume Control of the OSC-22.
5. Insert the plug on the end of the VA-22 power cord into the power receptacle on the OSC-22 chassis base.
6. Insert the plug on the end of the OSC-22 power cord into the electric outlet.

### Circuit Changes

The low end of the volume control and resistor R5 and capacitor C11 are connected to the common negative line (not to the chassis). C11 is changed from .2 mfd. to .1 mfd. (Stock No. 4839) in recent production.




### CONTROLS AND MOVING MECHANISM

In order to obtain best reproduction, the newly installed Volume Control should first be turned on about 2/3 full and the Volume Control on your radio receiver turned to the point that gives the greatest volume you are likely to require. Then all control of volume may be made with the knob on the Wireless Victrola Attachment. In particularly noisy locations it may be preferable to set the Volume Control of the Wireless Victrola Attachment at about 2/3 full and regulate with the volume control knob on the receiver.

**The Victrola Adjustment.**—On the back of the OSC-22 chassis is a small adjusting rod to give reproduction at the most convenient point on your radio receiver dial. With your radio receiver in operation, set the Tuning Control to bring the pointer on the Standard Broadcast Scale to a point at the low frequency end between 530 and about 630 kilocycles, 530 is preferable, at which no station can be obtained. Then set your Wireless Victrola Attachment in operation and turn the adjusting rod on the OSC-22 slowly and carefully until the record reproduction is heard at its best.

**Antenna Modification.**—If, due to your particular special conditions, insufficient volume or excessive noise interference affects record reproduction, a simple remedy is to connect a wire from the Wireless Victrola Attachment to your radio antenna lead. This is easily accomplished by means of a length of wire to cover the distance between the Victrola Attachment and Radio Receiver. One end of this should be wound 3 or 4 turns around the outside of the short wire projecting from the OSC-22 plug on the power cord. The other end of the wire should be wound 3 or 4 turns around the outside of the receiver antenna lead. When an RCA Master Antenna is used, the wire should be wound around the counterpoise lead where it is attached to the A-3 terminal of your radio receiver antenna terminal board

**Radio Receiver Controls.**—Your radio receiver picks up the record selection as it does a broadcast program. So after the Victrola Adjustment is made, you must tune your radio receiver to the signal from the Wireless Victrola Attachment between 530 and about 630 kilocycles. Do this according to the instructions for operating your particular receiver and turn the Tuning Control to bring the pointer on the dial scale to the low frequency end of the Standard Broadcast band, about 530 to 630 kilocycles, and tune in accurately with the Wireless Victrola Attachment playing a selection. This point is your "Victrola" station. If you have a radio with Push Button Tuning you can set a push button and label it "Victrola." *The push button or switch labeled "Victrola," "Record Player" or "Phono" on RCA Victor Radio Receivers previous to 1939 is of no use with the Wireless Victrola Attachment.*

### PLAYING

Plug the power cord from the OSC-22 into a convenient house outlet, then to play records proceed as follows:

1. Turn on the power to your radio receiver.
2. Set the tuning knob to your new "Victrola" station (530 to 630 kilocycles), or if you have specially adjusted a push button, press it.
3. Turn on power to the Wireless Victrola Attachment.
4. Make the set-up for playing records in accordance with the original instructions accompanying the Victrola Attachment.
5. Turn the Wireless Victrola Attachment Volume Control about 2/3 fully clockwise.
6. Adjust radio receiver Tuning knob to accurately tune in the phonograph selection.
7. Turn Radio Receiver Volume Control to give the loudest reproduction you are likely to require.
8. Adjust the Wireless Victrola Attachment Volume Control to suit.
9. Adjust radio receiver Tone Control if desirable.

## Replacement Parts OSC-22 Wireless Oscillator

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | STOCK No. | DESCRIPTION |
|---|---|---|---|
| 33793 | Ballast—Ballast resistor tube—Type B86A (R8) | 33792 | Receptacle—A.C. receptacle |
| 12723 | Capacitor—56 mmfd. (C2) | 33793 | Resistor—Ballast resistor tube—Type B86A (R8) |
| 13003 | Capacitor—180 mmfd. (C1) | 14075 | Resistor—8,200 ohms, ½ watt (R3) |
| 12694 | Capacitor—220 mmfd. (C3) | 12412 | Resistor—47,000 ohms, ½ watt (R1, R2) |
| 4839 | Capacitor—0.1 mfd. (C4, C8) | 13734 | Resistor—120,000 ohms, ½ watt (R5, R9) |
| 33834 | Capacitor—0.2 mfd. (C9, C11) | 13730 | Resistor—1 meg., ½ watt (R4) |
| 32576 | Capacitor—Electrolytic, one section 20 mfd., and one section 12 mfd. (C5, C6) | 13601 | Resistor—10 meg., ½ watt (R6) |
| | | 31251 | Socket—Tube socket |
| 12635 | Capacitor—1,000 mfd. (C10) | 33793 | Tube—Ballast resistor tube—Type B86A (R8) |
| 32501 | Coil—Oscillator coil (L1, L2) | 33794 | Volume control and switch (R7, S1) |

# MODEL Q23

## Chassis No. RC-592 — Six-Tube, Five-Band, A-C, Superheterodyne Receiver

## Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)..540-1,720 kc (556-174 m)
Medium Wave ("B" Band).....3.0-9.5 mc (100-31.6 m)
"31" Meter Spread Band.....9.5-11.7 mc (31.6-25.6 m)
"25" Meter Spread Band.....11.7-15.1 mc (25.6-19.9 m)
"19-13" Meter Spread Band.....15.1-22.5 mc (19.9-13.3 m)

INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SA7..... 1st Detector-Oscillator
(2) RCA-6SK7..... I-F Amplifier
(3) RCA-6SQ7.....2nd Detector, A-F Amplifier, A.V.C.
(4) RCA-6AD7-G ..... Phase Inverter, Power Output
(5) RCA-6F6-G ..... Power Output
(6) RCA-5Y3-G ..... Rectifier

LOUDSPEAKER (RL-79A6)

Type ..... 6-inch Electrodynamic
Voice Coil Impedance..... 2.2 ohms at 400 cycles

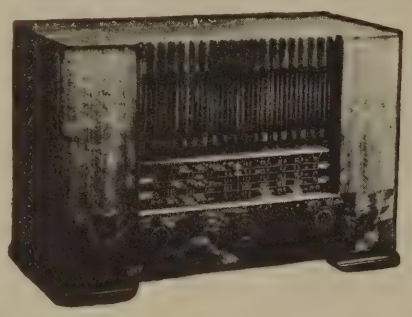
POWER OUTPUT

Undistorted ..... 3 watts
Maximum ..... 3.5 watts

POWER SUPPLY RATINGS

| Symbol | Voltages | Frequency (cycles) | Watts |
|---|---|---|---|
| Rating A | 105-125 | 50-60 | 65 |
| Rating B | 105-125 | 25-60 | 65 |
| Rating C | 105-125, 200-250 | 50-60 | 65 |

Tuning Drive Ratio..... 22:1
Pilot Lamps .....(2) Mazda No. 44, 6-8 V., 0.25 amp.

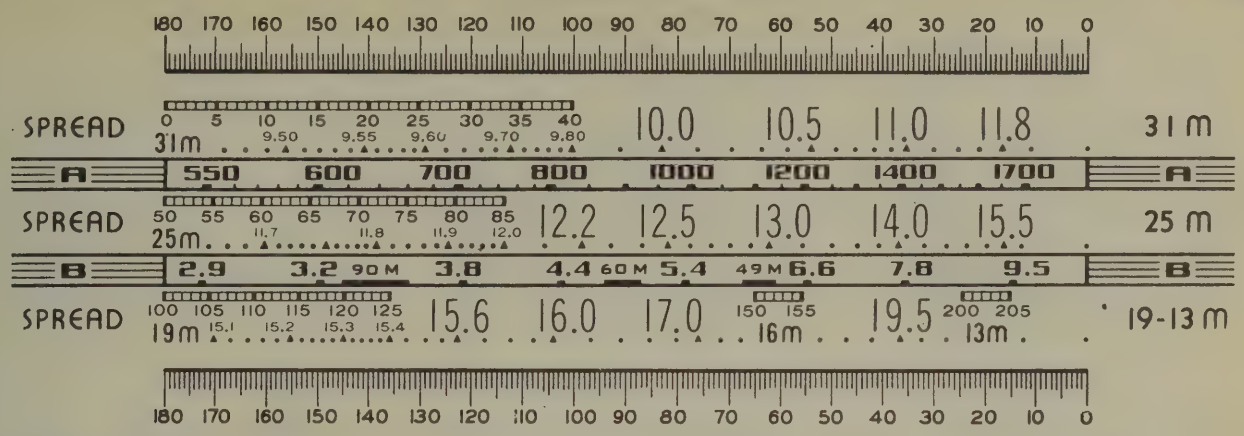


## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC592)** |
| 37981 | Bracket—Drive cord pulley bracket (1 pulley) |
| 35622 | Bracket—Support bracket for shaft and flywheel |
| 37976 | Bracket—Tone control bracket |
| 35642 | Calibrator—Drive drum calibrator scale |
| 33014 | Capacitor—Electrolytic comprising 3 sections of 10 mfd., 450 volts and 1 section of 20 mfd., 25 volts |
| 12714 | Capacitor—Air trimmer—medium |
| 34654 | Capacitor—Mica trimmer comprising 3 sections of 2.5—10 mmf. each |
| 35646 | Capacitor—6 mmf., ceramic |
| 36012 | Capacitor—15 mmf., ceramic |
| 39608 | Capacitor—15 mmf., silvered mica |
| 35644 | Capacitor—47 mmf., ceramic |
| 39620 | Capacitor—47 mmf., silvered mica |
| 30949 | Capacitor—56 mmf. |
| 12723 | Capacitor—56 mmf., moulded |
| 35645 | Capacitor—68 mmf., ceramic |
| 39624 | Capacitor—68 mmf., silvered mica |
| 30904 | Capacitor—100 mmf. |
| 39628 | Capacitor—100 mmf., moulded |
| 39636 | Capacitor—220 mmf., moulded |
| 39646 | Capacitor—560 mmf., silvered mica |
| 35643 | Capacitor—3000 mmf., tubular |
| 33806 | Capacitor—.0015 mfd., 1500 volts |
| 5107 | Capacitor—.0025 mfd., 700 volts |
| 4838 | Capacitor—.005 mfd., 1000 volts |
| 4858 | Capacitor—.01 mfd., 300 volts |
| 4937 | Capacitor—.01 mfd., 1000 volts |
| 5196 | Capacitor—.035 mfd., 400 volts |
| 4886 | Capacitor—.05 mfd., 400 volts |
| 35632 | Coil—Antenna coil, "A" band |
| 35631 | Coil—Antenna coil, spread band |
| 35623 | Coil—Oscillator coil, "A" and "B" band |
| 35624 | Coil—Oscillator coil, "19-13 meter" band |
| 35625 | Coil—Oscillator coil, 25 meter band |
| 35626 | Coil—Oscillator coil, 31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 38409 | Control—Tone control |
| 38412 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 27-in. overall length) |
| 34662 | Cord—Pointer cord (approx. 43-in. overall length) |
| 12006 | Core—Adjustable core and stud for I. F. transformers |
| 35788 | Core—Adjustable core and stud for coil No. 35623 |
| 31259 | Core—Adjustable core and stud for coils Nos. 35624, 35625 and 35626 |
| 35627 | Drum—Drive drum less calibrator dial |
| 35638 | Flywheel—Tuning knob shaft flywheel |
| 5040 | Plug—4 contact female plug for speaker cable |
| 36627 | Pulley—Drive cord pulley |
| 34761 | Resistor—10 ohms, ½ watt |
| 30735 | Resistor—560 ohms, 1 watt |
| 30436 | Resistor—12,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30493 | Resistor—150,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30652 | Resistor—1 megohm, ½ watt |
| 30649 | Resistor—2.2 megohm, ½ watt |
| 13601 | Resistor—10 megohm, ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drum |
| 37979 | Shaft—Tuning knob shaft |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Cord spring |
| 12007 | Spring—Retaining spring for core and stud |
| 31261 | Spring—Retaining spring for oscillator coils' core and studs |
| 39847 | Switch—Range switch |
| 32827 | Switch—Voltage switch |
| 35636 | Transformer—First I. F. transformer |
| 35628 | Transformer—Second I. F. transformer |
| 35588 | Transformer—Power transformer, 105-120 volt, 25 cycle |
| 32911 | Transformer—Power transformer, 105-120 volt, 50-60 cycle |
| 32852 | Transformer—Power transformer, 105-120v/200-220 volt, 50-60 cycle |
| 2917 | Washer—"C" washer for tuning knob shaft |
| | **SPEAKER ASSEMBLIES (RL79A6)** |
| 35849 | Cap—Dust cap |
| 35810 | Coil—Field coil |
| 32906 | Coil—Neutralizing coil |
| 36077 | Cone—Cone complete with voice coil |
| 5039 | Plug—4 prong male speaker plug |
| 35809 | Transformer—Output transformer |
| | NOTE: If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required. |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36103 | Decalcomania—Power switch and volume control decal |
| 37839 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 39915 | Dial—Glass dial scale |
| 37989 | Indicator—Station selector indicator |
| 35650 | Knob—Tone control knob |
| 35775 | Knob—Tuning knob |
| 35814 | Knob—Volume control or range switch knob |
| 11891 | Lamp—Dial lamp |
| 36793 | Rail—Indicator guide rail |
| 30900 | Spring—Retaining spring for knobs |

# Alignment Procedure




**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

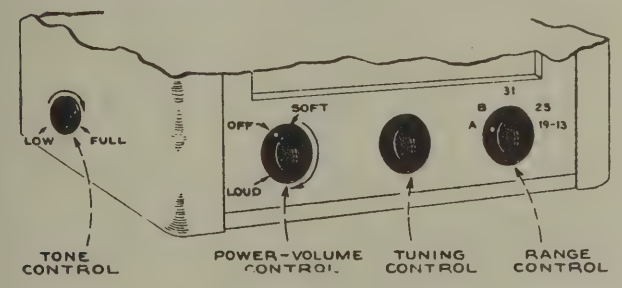
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

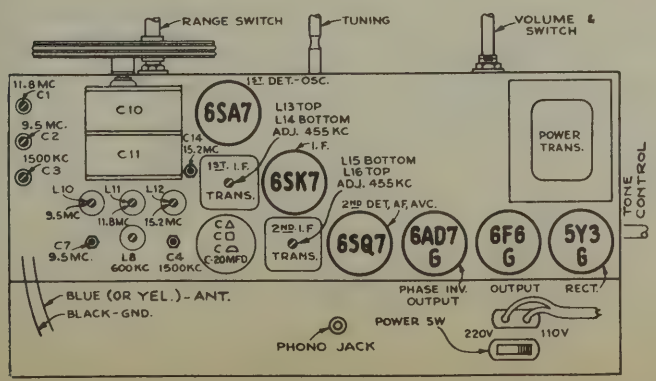
**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

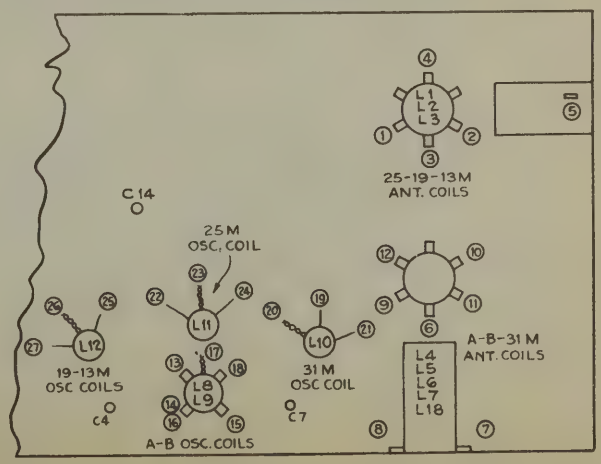


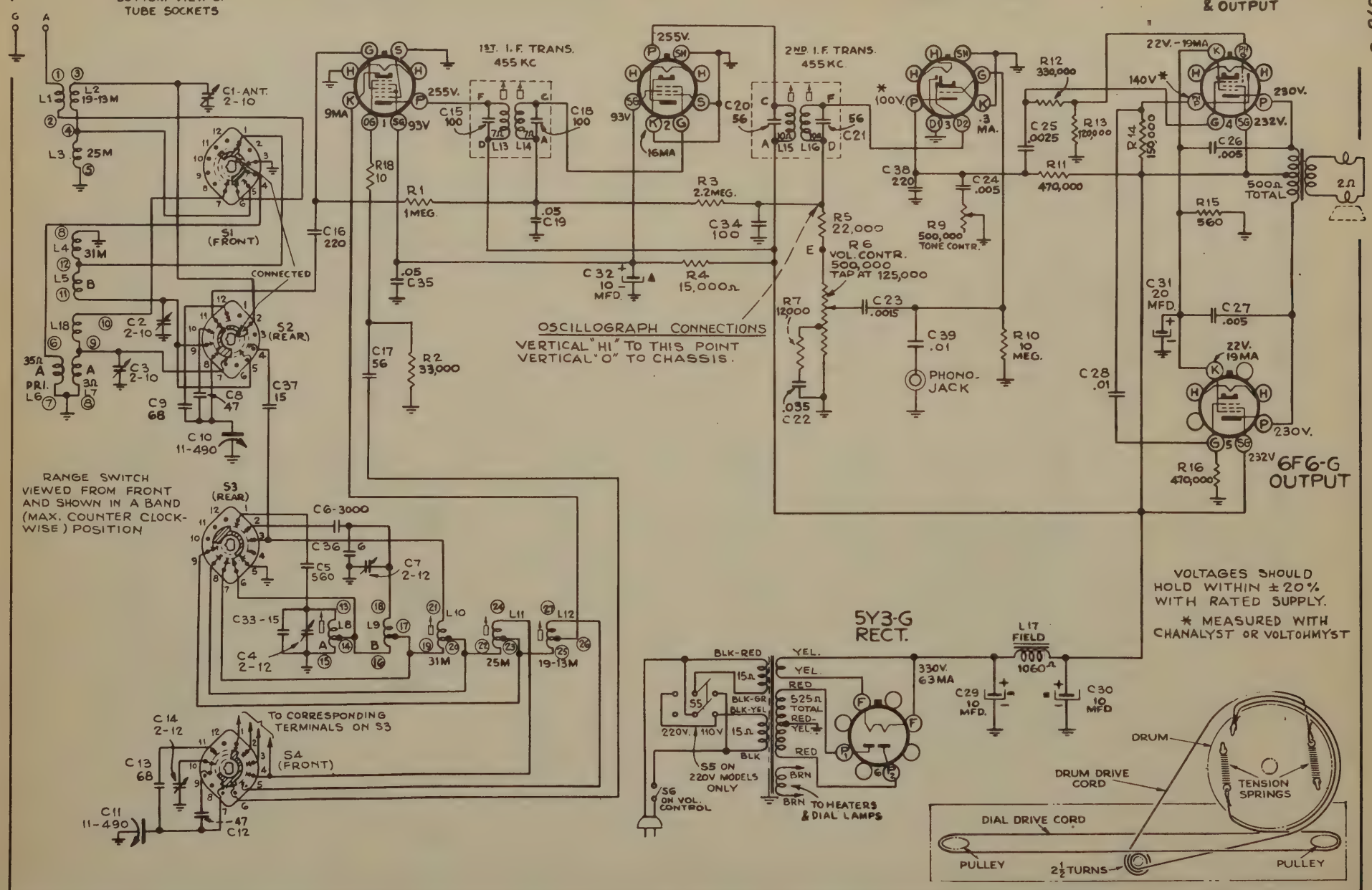




| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| | On oscillator-circuit cores and trimmers, if two peaks can be obtained, use the one of minimum inductance or minimum capacity. | | | | |
| 1 | 1st I-F grid cap, in series with .01 mfd. | 455 kc | A | Quiet point near 180° | L15 and L16 2nd I-F transformer |
| 2 | 1st Det. grid, in series with .01 mfd. | | | | L13 and L14 1st I-F transformer |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L11 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C14 (osc.)* |
| 5 | | Repeat steps 3 and 4. | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L12 (osc.) |
| 7 | | 9.5 mc | 31M | 156° | L10 (osc.) C2 (ant.) |
| 8 | | 9.5 mc | B | 11.5° | C7 (osc.) |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C4 (osc.) C3 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | Repeat steps 9 and 10. | | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C14 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

NOTE: Oscillator tracks above signal on all bands.

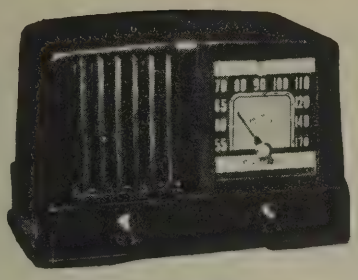



BOTTOM VIEW OF TUBE SOCKETS
6SA7 1ST DET.-OSC.
6SK7 I.F.
6SQ7 2ND DET.-A.F.-A.V.C.
6AD7G PH INVER. & OUTPUT
1ST. I.F. TRANS. 455 KC.
2ND. I.F. TRANS. 455 KC.
L1 L2 19-13M
C1-ANT. 2-10
L3 25M
S1 (FRONT)
L4 31M
L5 B
L18 C2 2-10
S2 (REAR)
L6 L7
C3 2-10
C8 47
C9 68
C10 11-490
C37 15
C16 220
C17 56
R2 33,000
R18 10
R1 1MEG.
C15 100
C18 100
L13 L14
.05 C19
.05 C35
C32 10 MFD.
R4 15,000Ω
R3 2.2MEG.
C34 100
C20 56
C21 56
L15 L16
R5 22,000
R6 VOL. CONTR. 500,000 TAP AT 125,000
R7 12000
.035 C22
C23 .0015
C39 .01
PHONO JACK
R10 10 MEG.
R9 500,000 TONE CONTR.
C38 220
C24 .005
R11 470,000
R12 330,000
C25 .0025
R13 120,000
R14 150,000
C26 .005
R15 560
C31 20 MFD.
C27 .005
C28 .01
R16 470,000
500Ω TOTAL
2Ω
6F6-G OUTPUT
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS POINT
VERTICAL "O" TO CHASSIS.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN A BAND (MAX. COUNTER CLOCK-WISE) POSITION
S3 (REAR)
C6-3000
C36
C5 560
C7 2-12
C33-15
C4 2-12
L8 L9 L10 L11 L12
31M 25M 19-13M
C14 2-12
C13 68
C11 11-490
C12 .047
S4 (FRONT)
TO CORRESPONDING TERMINALS ON S3
5Y3-G RECT.
BLK-RED
YEL.
RED
BLK-GR
BLK-YEL
RED-YEL
BLK
BRN
525Ω TOTAL
15Ω
55
220V. 110V
S5 ON 220V MODELS ONLY
SG ON VOL. CONTROL
TO HEATERS & DIAL LAMPS
330V. 63MA
L17 FIELD 1060Ω
C29 10 MFD.
C30 10 MFD
VOLTAGES SHOULD HOLD WITHIN ±20% WITH RATED SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST
DRUM
DRUM DRIVE CORD
TENSION SPRINGS
DIAL DRIVE CORD
PULLEY
2½ TURNS
PULLEY

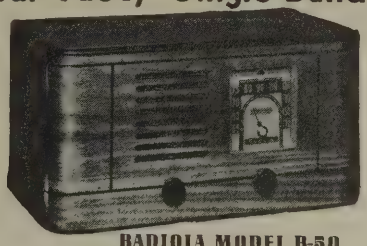
# MODELS 24BT-1 and 24BT-2 & RADIOLA B-50

## Chassis No. RC-1004-F RC-1004-H

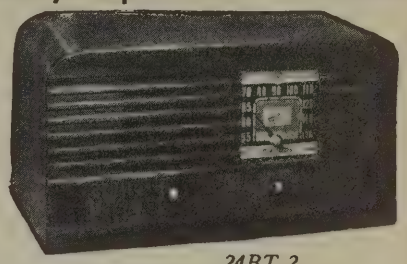
## Four-Tube, Single-Band, Battery-Operated Receiver



*24BT-1*



RADIOLA MODEL B-50



*24BT-2*

## Specifications

FREQUENCY RANGE ..... 540-1,720 kc

INTERMEDIATE FREQUENCY ..... 455 kc

RCA TUBE COMPLEMENT

(1) RCA 1A7GT ..... 1st Detector-Oscillator
(2) RCA 1N5GT ..... I-F Amplifier
(3) RCA 1H5GT ..... 2nd Detector, A-F, and A.V.C.
(4) RCA 3Q5GT ..... Power Output

BATTERY REQUIRED

POWER SUPPLY

1 "A" - "B" 1½-90 volt pack.

BATTERY DRAIN

"A" ..... .25 amperes
"B" ..... 14 m.a.

MAX. POWER OUTPUT ..... .3 watt

LOUDSPEAKER (5-inch PM)

Identification number ..... RL-85-6 .... 92322-1
Voice coil impedance at 400 cycles ..... 3 ohms ..... 3 ohms

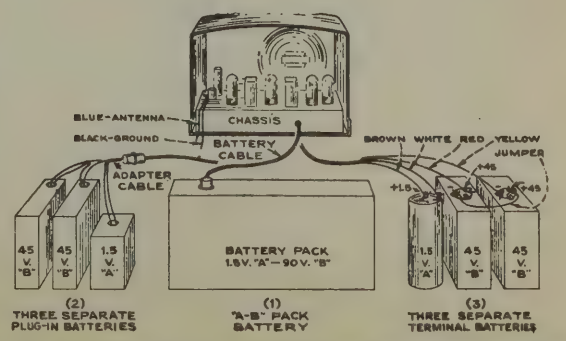
| CABINET DIMENSIONS (inches) | 24BT-1 | 24BT-2 |
|---|---|---|
| Height | 8½ | 9⅜ |
| Width | 12 | 17⅝ |
| Depth | 6¾ | 10⅛ |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1004F)** |
| 38347 | Arm—"On-Off" indicator and arm |
| 36082 | Can—Shield can for I.F. transformers |
| 30314 | Cap—Grip cap |
| 38593 | Capacitor—Electrolytic—10 mfd., 90 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of .0003 mfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd. |
| 38344 | Coil—Antenna coil |
| 38345 | Coil—Oscillator coil |
| 38311 | Condenser—Variable tuning condenser |
| 36080 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 17-in. overall length) |
| 38348 | Dial—Dial scale |
| 38314 | Indicator—Station selector indicator |
| 38350 | Lever—Indicator arm actuating lever |
| 38346 | Plate—Dial back plate complete with indicator arm—less dial scale |
| 30550 | Plug—4-prong male plug for battery cable |
| 30498 | Resistor—390 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 3903 | Screw—No. 8-32 cup point set screw |
| 36235 | Shaft—Tuning knob shaft |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 38349 | Spring—Indicator arm spring |
| 35098 | Spring—Used to hold I.F. transformers in shield can |
| 36082 | Transformer—First I.F. transformer—less shield can and grid cap |
| 38343 | Transformer—Second I.F. transformer—less shield can |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL 85-6)** |
| 32907 | Cap—Dust cap |
| 38397 | Cone—Cone complete with voice coil |
| 33779 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (92322-501)** |
| 38594 | Cone—Cone complete with voice coil |
| 38595 | Transformer—Output transformer |

| STOCK No. | DESCRIPTION |
|---|---|
| | See following page for Speaker Substitutions |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35104 | Crystal—Dial scale crystal for Model 24BT1 |
| 38815 | Crystal—Dial scale crystal for Model 24BT2 |
| 35678 | Fastener—Push-on fastener for crystal—Model 24BT1 |
| 36722 | Knob—Control knobs |
| 30900 | Spring—Retaining spring for knobs |
| | **CHASSIS ASSEMBLIES (RC-1004H)** |
| | **SAME AS RC-1004F** |
| | EXCEPT |
| 38596 | Dial - Dial scale. |
| 14138 | Resistor - 68,000 ohms, 1/4 watt |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38815 | Crystal—Station selector crystal |
| 36722 | Knob—Control knob |
| 30900 | Spring—Retaining spring for knobs |



# Alignment Procedure

**Cathode Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the diagram.

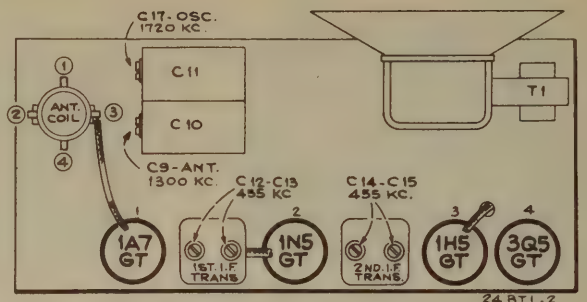
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output as low as possible to avoid AVC action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that it is horizontal.

| Step | Connect high side of test osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | Quiet point between 550 and 750 kc | C14, C15 (2nd I-F Trans.) |
| 2 | 1st Det. grid in series with .01 mfd. | | | C12, C13 (1st I-F Trans.) |
| 3 | Antenna terminal in series with 220 mmfd. | 1,720 kc | Tuning condenser rotor plates all out | C17 (osc.) |
| 4 | | 1,300 kc | 1,300 kc signal | C9 (ant.) |




## Substitute Speakers:

The following speakers may have been used as a substitute for Speaker RL-85-6 in Model 24BT-1.

| Number Stamped on Speaker | Cone and Voice Coil Stk. No. | Output Trans. |
|---|---|---|
| 92161-3 | 38352 | 39538 |
| 92161-4 | 39535 | 39538 |
| 92161-5 | 38352 | 39538 |
| 92322-2 | 39536 | 39538 |
| 92374-1 | 39537 | 39538 |
| RL-81-B2 | 35570 | 39538 |

Dust cap for above is No. 32907.

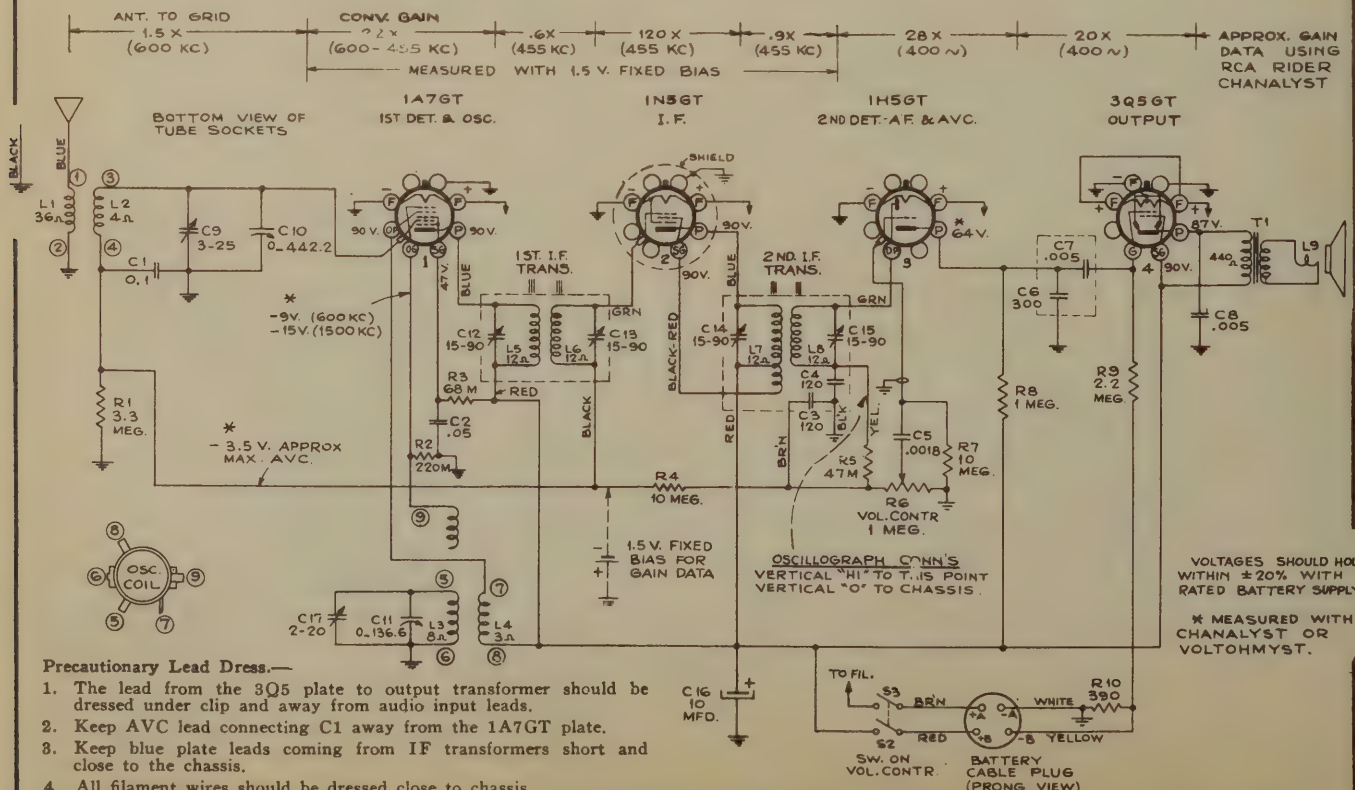
## 24BT-2,

### Speakers RL-85-5, RL-85-6, 92377-1, 92377-3:

Four different speakers have been used on these models. The replacement parts are listed below:

| Stock No. | Description |
|---|---|
| | (RL-85-5, RL-85-6) |
| 32907 | Cap—Dust cap |
| 38397 | Cone—Cone complete with voice coil |
| 33779 | Transformer—Output transformer |
| | (92377-1) |
| 39849 | Cone—Cone complete with voice coil |
| 39850 | Transformer—Output transformer |
| | (92377-3) |
| 39965 | Cone—Cone complete with voice coil |
| 39966 | Transformer—Output transformer |

NOTE: If number stamped on your speaker frame does not appear on above list, order part required by description giving number stamped on your speaker and receiver model.




**Precautionary Lead Dress.—**

1. The lead from the 3Q5 plate to output transformer should be dressed under clip and away from audio input leads.
2. Keep AVC lead connecting C1 away from the 1A7GT plate.
3. Keep blue plate leads coming from IF transformers short and close to the chassis.
4. All filament wires should be dressed close to chassis.

# MODEL Q24

## Six-Tube, Five-Band, AC-DC, Superheterodyne Receiver Chassis No. RC-508

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)..... 540-1,720 kc (556-174 m)
Medium Wave ("B" Band)..... 3.0-9.5 mc (100-31.6 m)
31 Meter Spread Band..... 9.5-11.7 mc (31.6-25.6 m)
25 Meter Spread Band..... 11.7-15.1 mc (25.6-19.9 m)
19-13 Meter Spread Band..... 15.1-22.5 mc (19.9-13.3 m)

INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7..... 1st Detector—Oscillator
(2) RCA-12C8..... I-F Amplifier, 2nd Detector, A.V.C.
(3) RCA-12SC7..... A-F Amplifier, Phase Inverter
(4) RCA-50L6GT..... Power Output
(5) RCA-50L6GT..... Power Output
(6) RCA-35Z5GT..... Rectifier

POWER SUPPLY RATINGS

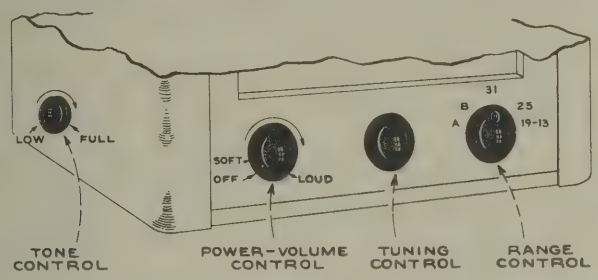
105-125 volts A-C 40-100 cycles or D-C..... 50 watts
160-180 volts A-C 40-100 cycles or D-C..... 55 watts
210-250 volts A-C 40-100 cycles or D-C..... 65 watts

LOUDSPEAKER (RL-92-1)

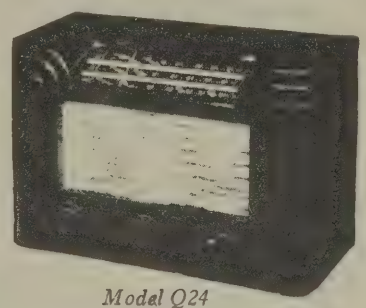
Type..... 6-inch permanent magnet dynamic
V. C. Impedance at 400 cycles..... 3.4 ohms

POWER OUTPUT

Undistorted..... 3 watts
Maximum..... 3.5 watts




*Controls*



*Model Q24*

### Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-508)** |
| 35635 | Ballast—Ballast resistor (M-91462-2) |
| 35640 | Bracket—Bracket with one pulley for indicator cord |
| 35622 | Bracket—Flywheel and shaft mounting bracket |
| 35639 | Bracket—Long bracket with three pulleys for indicator cord |
| 12714 | Capacitor—Medium air trimmer (C4, C5) |
| 34654 | Capacitor—Mica trimmer—comprising 3 sections (C1, C3, C6) |
| 35646 | Capacitor—6 mmfd. |
| 33099 | Capacitor—15 mmfd. |
| 31350 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 13141 | Capacitor—47 mmfd., moulded |
| 30949 | Capacitor—56 mmfd., mica (I-F) |
| 12723 | Capacitor—56 mmfd., moulded |
| 35645 | Capacitor—68 mmfd., ceramic |
| 13057 | Capacitor—68 mmfd., mica |
| 30904 | Capacitor—100 mmfd., mica (I-F) |
| 12720 | Capacitor—100 mmfd., moulded |
| 12694 | Capacitor—220 mmfd. |
| 31433 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 33806 | Capacitor—.0015 mfd. |
| 5107 | Capacitor—.0025 mfd. |
| 4838 | Capacitor—.005 mfd. |
| 4858 | Capacitor—.01 mfd., 500 volts |
| 14393 | Capacitor—.01 mfd., 1,000 volts |
| 4870 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 33824 | Capacitor—Electrolytic comprising two sections of 40 mfd., one section of 10 mfd. and one section of 20 mfd. |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—A and B bands |
| 35624 | Coil—Oscillator coil—19-13 meter band |
| 35625 | Coil—Oscillator coil—25 meter band |
| 35626 | Coil—Oscillator coil—31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 35629 | Control—Tone control |
| 35620 | Control—Volume control and power switch |
| 32635 | Cord—Condenser drive cord |
| 34662 | Cord—Indicator drive cord |
| 35642 | Dial—Calibrator dial for drive drum |
| 35627 | Drum—Tuning condenser drive drum—less calibrator |
| 35638 | Flywheel—Tuning shaft flywheel |
| 5119 | Plug—3-contact female plug for speaker cable |
| 35641 | Pulley—Indicator cord pulley |
| 35630 | Pulley—Pulley operating between the tuning shaft and drive drum |
| 35635 | Resistor—Ballast resistor (M-91462-2) |
| 18190 | Resistor—47 ohms, 1 watt |
| 35711 | Resistor—100 ohms, 4 watts |
| 2736 | Resistor—180 ohms, 1 watt |
| 32165 | Resistor—470 ohms, 2 watts |
| 3526 | Resistor—2,200 ohms, ½ watt |
| 30494 | Resistor—4,700 ohms, ½ watt |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 12759 | Resistor—15,000 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35633 | Shaft—Range switch indicator knob shaft |
| 35637 | Shaft—Tuning shaft |
| 35634 | Socket—Ballast resistor socket (Remove terminals not required.) |
| 31639 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 33742 | Socket—Phono. input socket |
| 13638 | Spring—Drive spring |
| 35621 | Switch—Range switch |
| 35636 | Transformer—First I-F transformer—less grid lead and clip |
| 35628 | Transformer—Second I-F transformer |
| 35635 | Tube—Ballast resistor |
| 33726 | Washer—"C" washer for pulley, Stock No. 35630 |
| | **SPEAKER ASSEMBLIES (RL-92-1)** |
| 32907 | Cap—Dust cap |
| 36077 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 35940 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35655 | Back—Back cover—less power cord |
| 32836 | Cord—Power cord complete with plugs |
| 35392 | Decalcomania—"RCA Victor" decal |
| 35712 | Dial—Glass dial scale |
| 35911 | Frame—Dial frame complete except—less pointer and dial |
| 35648 | Indicator—Station selector indicator |
| 35652 | Knob—Band indicator knob |
| 35651 | Knob—Range switch knob |
| 35650 | Knob—Tone control knob |
| 35955 | Knob—Volume control or tuning knob |
| 35976 | Lamp—Dial lamp |
| 35653 | Mounting—One set speaker mounting hardware |
| 14270 | Spring—Retaining spring for knobs, Stock Nos. 35650, 35955, and 35651 |
| 4982 | Spring—Retaining spring for knob, Stock No. 35652 |

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

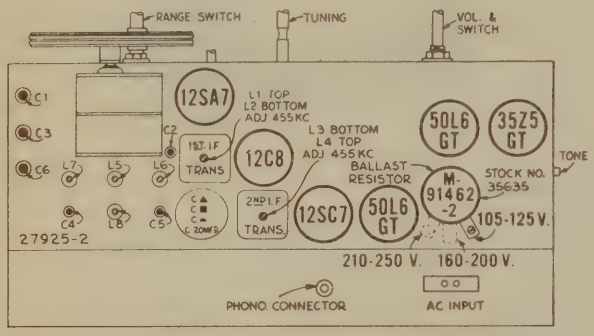
**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

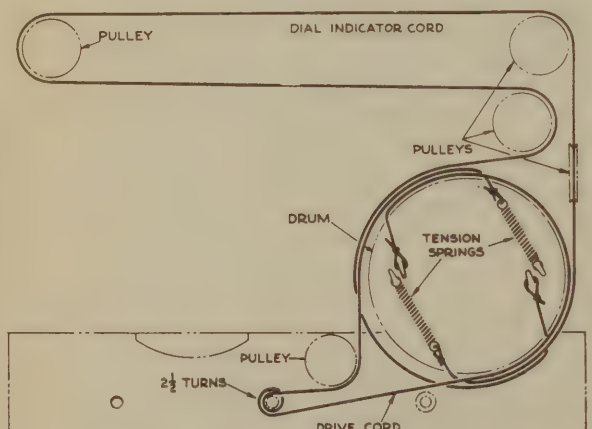
To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.




*Tube and Trimmer Location*




*Dial-Indicator and Drive Mechanism*

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

Precautionary Lead Dress.—

1. All leads between antenna coils and switch must be as short as possible and kept away from oscillator coil, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.
3. Blue plate lead of 2nd I-F should be dressed under other leads and against chassis.
4. Filament lead of 50L6GT should be dressed against chassis and away from 12SC7 socket.

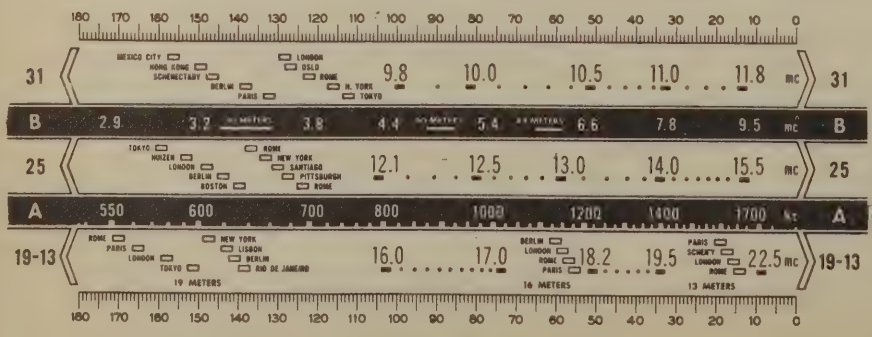
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 12C8 I-F grid in series with .01 mfd. | 455 kc | A | Quiet Point near 180° | L3 and L4 2nd I-F Trans. |
| 2 | 12SA7 1st Det. grid in series with .01 mfd. | | | | L1 and L2 1st I-F Trans. |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L5 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C2 (osc.)* |
| 5 | | Repeat steps 3 and 4 | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L6 (osc.)** |
| 7 | | 9.5 mc | 31M | 156° | L7 (osc.)** C3 (ant.) |
| 8 | | 9.5 mc | B | 11.5° | C4 (osc.)*** |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C5 (osc.) C6 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | | Repeat steps 9 and 10 | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C2 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

**Peak at minimum position of plunger if two peaks can be obtained.

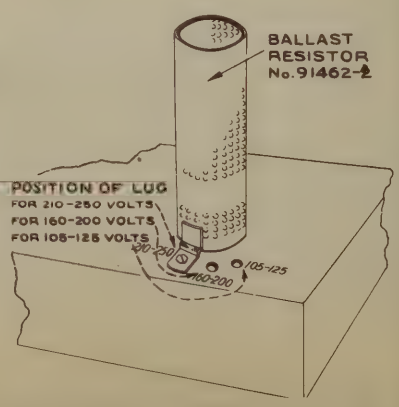
***Peak at minimum capacity if two peaks can be obtained.

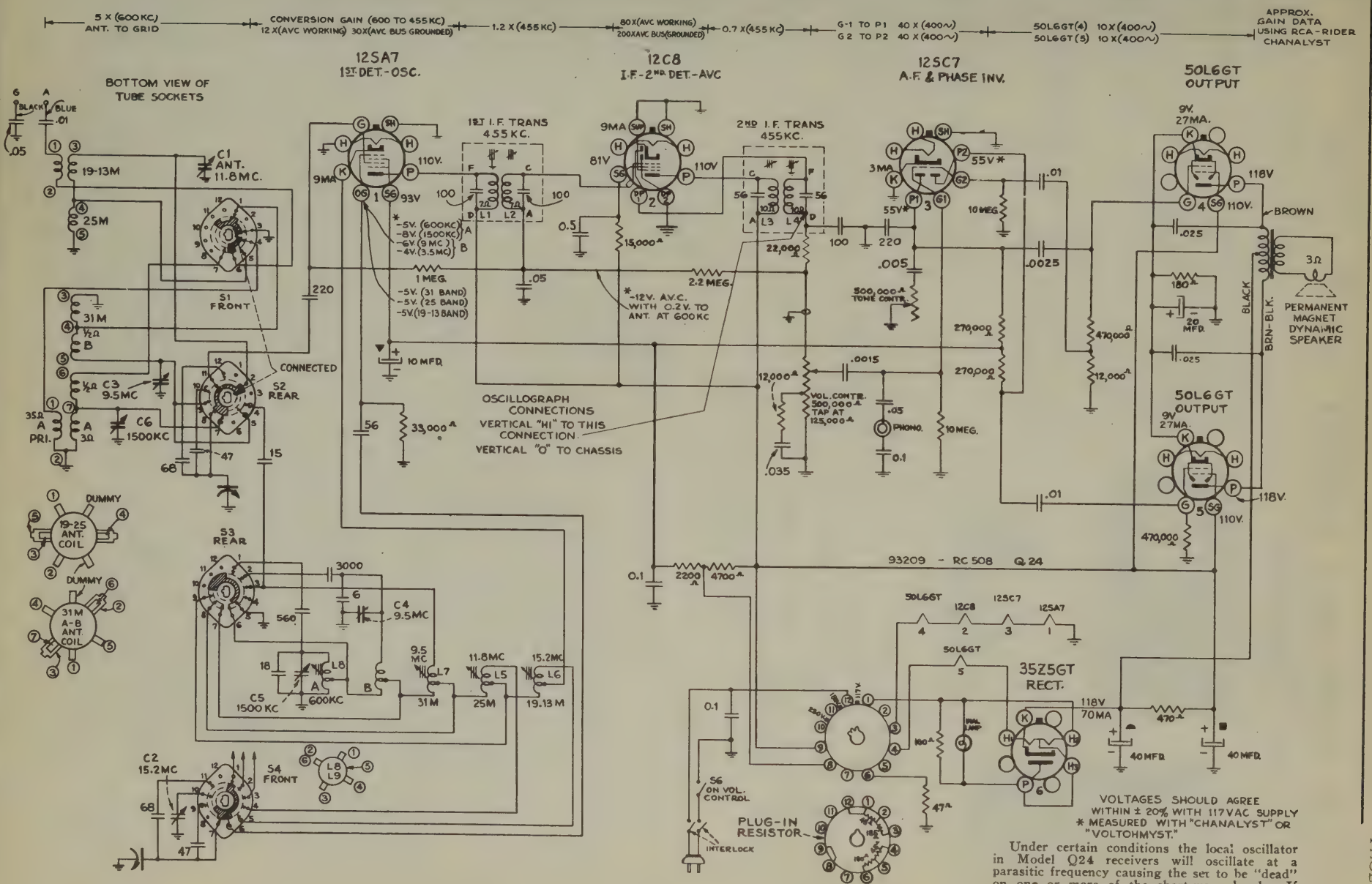
**NOTE:** Oscillator tracks above signal on all bands.




## Calibration Scale

*Reduced Reproduction of Receiver Dial and Corresponding 0-180° Calibration Scales*



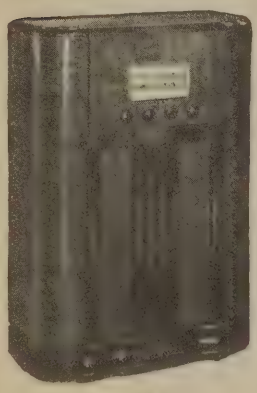



*Schematic Circuit Diagram*

Under certain conditions the local oscillator in Model Q24 receivers will oscillate at a parasitic frequency causing the set to be "dead" on one or more of the short-wave bands. If this condition exists it can be corrected by connecting a 10 ohm, ½ watt resistor in series with the oscillator grid, mounted directly at the tube socket.

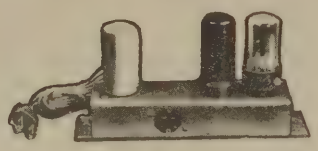
# MODELS 25BK and 25BT-3 and CV-42 Electrifier

Chassis No. (RC-1004B)



25BK

25BT-3



CV-42

## Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band) ..... 540—1720 kc
Short Wave ("C" Band) ..... 6.0—18.0 mc

INTERMEDIATE FREQUENCY ..... 455 kc

RCA TUBE COMPLEMENT

(1) RCA 1N5-GT ..... R-F Amplifier
(2) RCA 1A7-GT ..... Detector-Oscillator
(3) RCA 1N5-GT ..... I-F Amplifier
(4) RCA 1H5-GT ..... 2nd Detector, A-F and A.V.C.
(5) RCA 3Q5-GT ..... Power Output

POWER SUPPLY

1 "A" - "B" 1½-90 volt pack.

These models can be operated on 105-125 AC, 50-60 cycles or 105-125 volts DC, by means of an RCA CV-42 Electrifier.

MAX. POWER OUTPUT ..... .3 watt

BATTERY DRAIN

"A" ..... .3 amperes
"B" ..... 10 m.a. (Switch at "Battery Saver" position)
14 m.a. ("Maximum output" position)

| LOUDSPEAKERS (PM) | 25BK | 25BT3 |
|---|---|---|
| Identification number ..... | 92355-1 | RL-93-1 |
| Diameter ..... | 9¼ inch elliptical | 5 inches |

POWER CONSUMPTION (CV-42) ..... 22.5 watts

## IMPORTANT

Remove any external ground connections when using the Electrifier.

CAUTION: Turn power switch off (counter-clockwise) when installing or replacing tubes or batteries.

DO NOT TURN THE "BATTERY-ELECTRIC" SWITCH TO ELECTRIC POSITION WHILE THE RECEIVER IS CONNECTED TO BATTERIES.

## Alignment Procedure

**Cathode Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output as low as possible to avoid A.V.C. action.

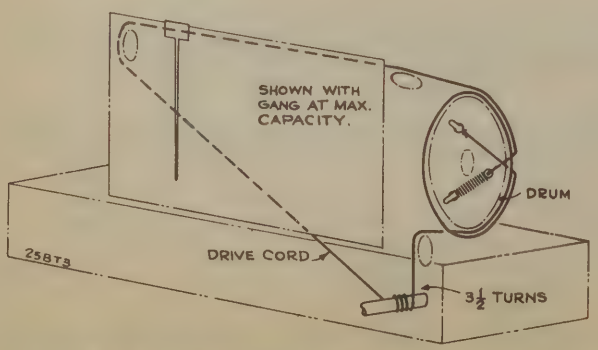
**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the A.V.C. bus.

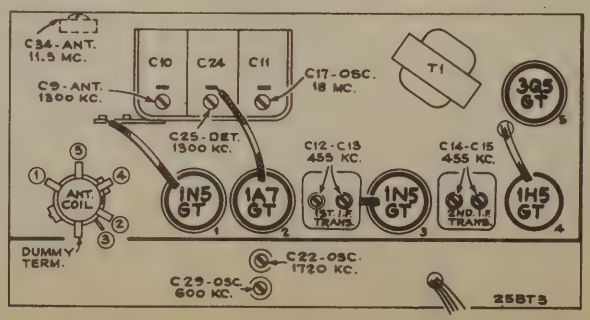
**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be set at the left-hand end dial calibration mark.

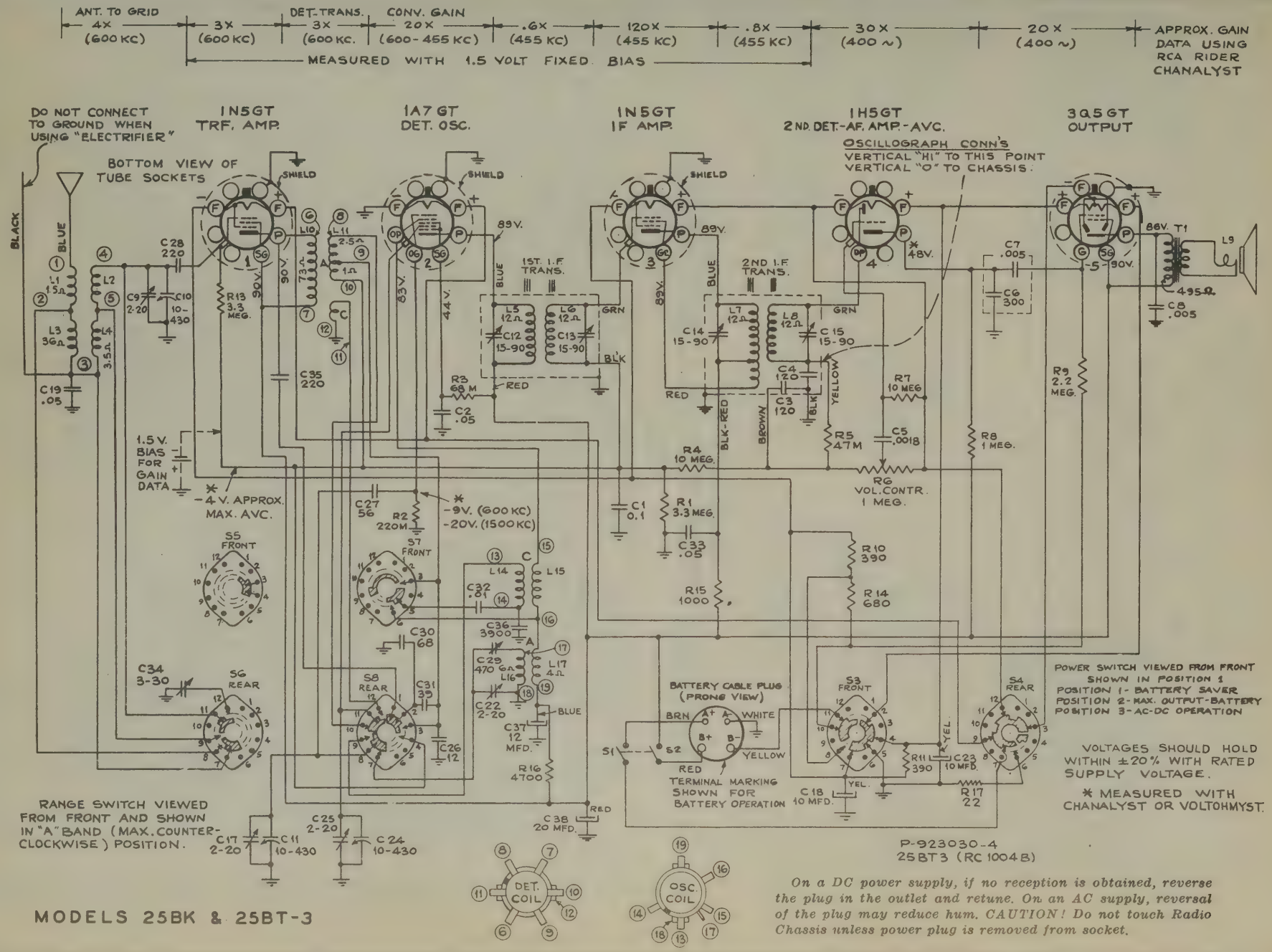
Precautionary Lead Dress:—

1. All filament wires should be dressed close to chassis.
2. Keep AVC lead connecting .1 Mfd. Filter to Ant. Coil away from 1A7GT plate.
3. Keep grid lead coming from first IF transformer short.
4. Keep Blue leads coming from IF transformer short and close to chassis.
5. Keep grid leads of 1N5GT and 1A7GT tubes away from each other.

| Step | Connect high side of test osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | "A" Band, Quiet point between 550 and 750 kc | C14 and C15 (2nd I-F trans.) |
| 2 | 1st Det. grid in series with .01 mfd. | | | C12 and C13 (1st I-F trans.) |
| 3 | Antenna terminal in series with 220 mfd. | 18 mc | 18 mc | C17 (Osc.) |
| 4 | | 1720 kc | Tuning condenser rotor plates all out | G22 (Osc.) |
| 5 | | 600 kc | 600 kc | C29 (Rock) |
| 6 | | 1300 kc | 1300 kc signal | C9 (Ant.) C25 (Det.) |
| 7 | Repeat steps 4, 5, and 6 | | | |
| 8 | Antenna terminal in series with 300 ohms | 11.5 mc | 11.5 mc signal | C34 (Ant.) |



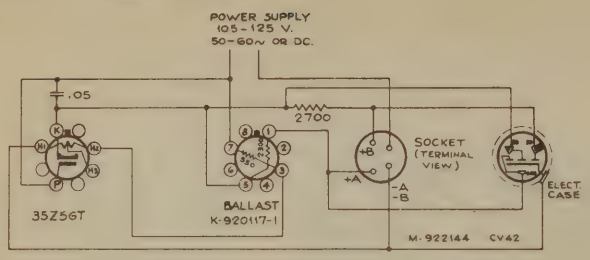




ANT. TO GRID 4X (600 KC)
3X (600 KC)
DET.-TRANS. 3X (600 KC.
CONV. GAIN 20X (600-455 KC)
.6X (455 KC)
120X (455 KC)
.8X (455 KC)
30X (400 ~)
20X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
MEASURED WITH 1.5 VOLT FIXED BIAS
DO NOT CONNECT TO GROUND WHEN USING "ELECTRIFIER"
1N5GT TRF. AMP.
1A7 GT DET. OSC.
1N5GT IF AMP.
1H5GT 2ND DET.-AF. AMP.-AVC.
3Q5GT OUTPUT
OSCILLOGRAPH CONN'S VERTICAL "HI" TO THIS POINT VERTICAL "O" TO CHASSIS.
BOTTOM VIEW OF TUBE SOCKETS
SHIELD
1ST. I.F. TRANS.
2ND I.F. TRANS.
1.5 V. BIAS FOR GAIN DATA
-4 V. APPROX. MAX. AVC.
-9 V. (600 KC) -20 V. (1500 KC)
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAX. COUNTER-CLOCKWISE) POSITION.
BATTERY CABLE PLUG (PRONG VIEW)
TERMINAL MARKING SHOWN FOR BATTERY OPERATION
POWER SWITCH VIEWED FROM FRONT SHOWN IN POSITION 1
POSITION 1 - BATTERY SAVER
POSITION 2 - MAX. OUTPUT-BATTERY
POSITION 3 - AC-DC OPERATION
VOLTAGES SHOULD HOLD WITHIN ±20% WITH RATED SUPPLY VOLTAGE.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
P-923030-4
25BT3 (RC 1004B)
DET. COIL
OSC. COIL

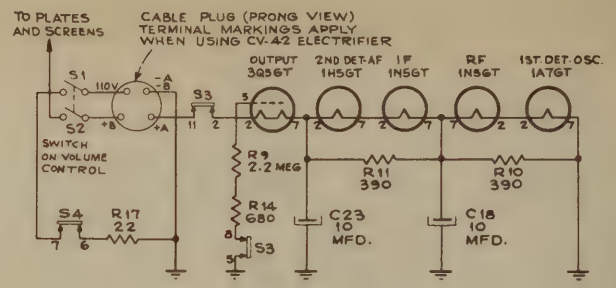
MODELS 25BK & 25BT-3

*On a DC power supply, if no reception is obtained, reverse the plug in the outlet and retune. On an AC supply, reversal of the plug may reduce hum. CAUTION! Do not touch Radio Chassis unless power plug is removed from socket.*

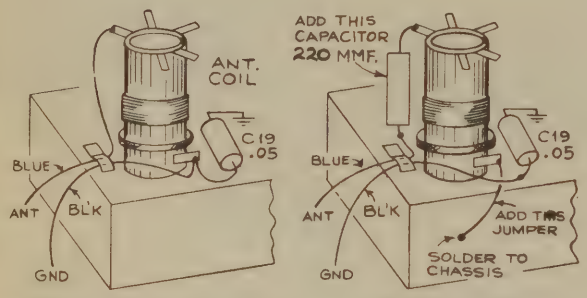
# 25BT2, B52, CV42




*Circuit of CV-42 Electrifier*




*Simplified Diagram of Filament Circuit when using CV-42*




**Hum Modulation on Model 25BT3 When Using CV-42 "Electrifier."**

The following changes should be made in cases where hum modulation is experienced when operating Model 25BT3 from a CV-42 electrifier power unit. It is *not* necessary to remove the chassis from the cabinet to make these changes.

(1) Connect a 220 mmfd. molded mica capacitor in series with the blue antenna lead as shown.

(2) Disconnect the black ground lead and C19 from the bottom lug on the antenna coil. Connect a jumper from this lug to chassis. Connect the black ground lead to C19 and tape the joint.

The original and revised connections are shown at left.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

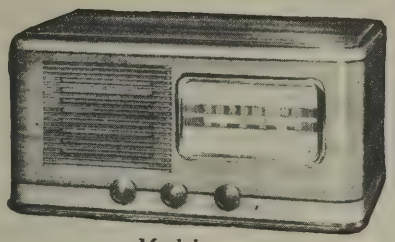
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1004B)** |
| 38675 | Arm—"On-Off" indicator and arm assembly |
| 36083 | Can—Shield can for I.F. transformers |
| 30314 | Cap—Grid cap |
| 38706 | Capacitor—Electrolytic, comprising 1 section of 20 mfd., 90 volts, 1 section of 12 mfd., 90 volts, and 2 sections of 10 mfd., 10 volts |
| 38671 | Capacitor—Adjustable capacitor comprising 1 section of 450-600 mmfd., and 1 section of 5-20 mmfd. |
| 36192 | Capacitor—Mica trimmer—3-30 mmfd. |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of .0003 mfd. |
| 13002 | Capacitor—12 mmfd. |
| 13545 | Capacitor—39 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 36247 | Capacitor—3900 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4858 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd. |
| 38819 | Coil—Antenna coil |
| 38820 | Coil—Oscillator coil |
| 36191 | Coil—R.F. coil |
| 36186 | Condenser—Variable tuning condenser |
| 36080 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 42-in. overall length) |
| 38822 | Dial—Dial scale for 25BT3 |
| 38678 | Drum—Drive drum for tuning condenser |
| 36193 | Indicator—Station selector indicator |
| 38350 | Lever—Indicator arm actuating lever |
| 38676 | Plate—Dial back plate complete with pulleys and "Off-On" indicator arm |
| 30550 | Plug—4-prong male plug for battery cable |
| 38674 | Pulley—Drive cord pulley |
| 13999 | Resistor—22 ohms, 1 watt |
| 30498 | Resistor—390 ohms, ½ watt |
| 12262 | Resistor—680 ohms, ½ watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 30146 | Resistor—4,700 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 3903 | Screw—No. 8-32 cup point set screw |
| 36195 | Shaft—Tuning knob shaft |

| STOCK No. | DESCRIPTION |
|---|---|
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 38349 | Spring—Indicator arm return spring |
| 35098 | Spring—To hold I.F. transformers in shield cans |
| 38670 | Switch—Power switch |
| 36188 | Switch—Range switch |
| 36082 | Transformer—First I.F. transformer—less shield can, spring and grid cap |
| 38343 | Transformer—Second I.F. transformer—less shield can and spring |
| 36194 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES FOR MODEL 25BT3 (RL-93-1)** |
| 32907 | Cap—Dust cap |
| 36426 | Cone—Cone complete with voice coil |
| | **SPEAKER ASSEMBLIES FOR MODEL 25BK (92378-1)** |
| 39066 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38824 | Decalcomania—Control panel decal |
| 38822 | Dial—Glass dial scale for 25BK |
| 38838 | Escutcheon—Dial scale escutcheon—less dial |
| 36886 | Knob—Range switch or power switch knob |
| 36722 | Knob—Volume control or tuning knob |
| 30900 | Spring—Retaining spring for knobs |
| | **CV-42 ELECTRIFIER (No. 38700)** |
| 38702 | Ballast—Plug-in ballast tube resistor |
| 38701 | Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts, 1 section of 30 mfd., 150 volts, and 1 section of 100 mfd., 10 volts |
| 30847 | Capacitor—.05 mfd., 400 volts |
| 28451 | Cover—Insulating cover for electrolytic capacitor |
| 35069 | Fastener—Push fastener for bottom cover |
| 28452 | Plate—Bakelite mounting plate for electrolytic capacitor |
| 38702 | Resistor—Ballast tube resistor |
| 30730 | Resistor—2,700 ohms, ½ watt |
| 31027 | Socket—Power output socket |
| 31251 | Socket—Tube or ballast resistor socket |
| 38702 | Tube—Ballast tube resistor |

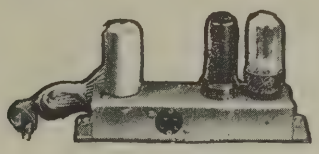
# MODEL 25BT-2 & RADIOLA B-52

CHASSIS No. RC-1004A RC-1004D AND CV-42 ELECTRIFIER

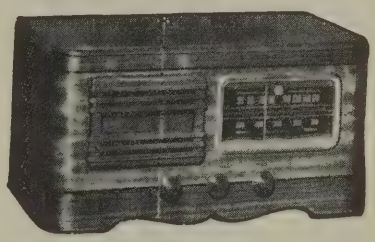
## Five-Tube, Single-Band, Battery-Operated Superheterodyne Receivers



*Model 25BT-2*



*CV-42 Electrifier*



MODEL B-52

## Specifications

FREQUENCY RANGE ..... 540-1,720 kc

INTERMEDIATE FREQUENCY ..... 455 kc

RCA TUBE COMPLEMENT

(1) RCA 1N5-GT ..... R-F Amplifier
(2) RCA 1A7-GT ..... 1st Detector-Oscillator
(3) RCA 1N5-GT ..... I-F Amplifier
(4) RCA 1H5-GT ..... 2nd Detector, A-F, and A.V.C.
(5) RCA 3Q5-GT ..... Power Output

POWER SUPPLY

1 "A" - "B" 1½-90 volt pack.

Model 25BT2 can be operated on 105-125 volts AC, 50-60 cycles, or 105-125 volts DC. by means of a RCA CV-42 Electrifier.

BATTERY DRAIN

MAXIMUM POWER OUTPUT ..... .3 watt
"A" ..... .3 amperes
"B" ..... 10 m.a. (Switch at "Battery Saver" position)
"C" .....14 m.a. (Switch at "Maximum Output" position)

POWER CONSUMPTION

With CV-42 Electrifier Unit ..... 22.5 watts

| LOUDSPEAKER (5-inch PM) | RL-85-6 | 92322-1 |
|---|---|---|
| Voice coil impedance at 400 cycles ..... | 3 ohms | 3 ohms |
| Cabinet Dimensions ..... | 18 inches x 10¼ x 9⅛ high | |

## Replacement Parts

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1004A)** |
| 38675 | Arm—"On-Off" indicator and arm assembly |
| 36083 | Can—Shield can for I.F. transformers |
| 30314 | Cap—Grip cap |
| 36718 | Capacitor—Electrolytic—10 mfd., 10 volts |
| 38705 | Capacitor—Electrolytic —25 mfd., 90 volts |
| 38672 | Capacitor—Adjustable pacitor comprising 1 section of 120 mmfd., a 1 section of 45-80 mmfd. |
| 37359 | Capacitor—Comprising a section of .005 mfd., and 1 section of .0003 mfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 32786 | Capacitor—0.1 mfd. |
| 38344 | Coil—Antenna coil |
| 38345 | Coil—Oscillator coil |
| 38677 | Coil—Wave trap coil |
| 36599 | Condenser—Variable tuning condenser |
| 36080 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 36-in. overall length) |
| 38821 | Dial—Dial scale |
| 38678 | Drum—Drive drum for tuning condenser |
| 36090 | Indicator—Station selector indicator |
| 38350 | Lever—Indicator arm actuating lever |
| 38673 | Plate—Dial back plate complete with pulleys and "Off-On" indicator |
| 30550 | Plug—4-prong male plug for battery cable |
| 38674 | Pulley—Drive cord pulley |
| 13999 | Resistor—22 ohms, 1 watt |
| 30498 | Resistor—390 ohms, ½ watt |
| 12262 | Resistor—680 ohms, ½ watt |
| 13714 | Resistor—5,600 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 12928 | Resistor—3.3 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 3903 | Screw—No. 8-32 cup point set screw |
| 36897 | Shaft—Tuning knob shaft |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 38349 | Spring—Indicator arm return spring |
| 35098 | Spring—To hold I.F. transformers in shield cans |
| 38670 | Switch—Power switch |
| 36082 | Transformer—First I.F. transformer—less shield can, spring and grid cap |
| 38343 | Transformer — Second I.F. transformer — less shield can and spring |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (92322-1)** |
| 38594 | Cone—Cone complete with voice coil |
| 38595 | Transformer—Output transformer |

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (RL-85-6)** |
| 32907 | Cap—Dust cap |
| 38397 | Cone—Cone complete with voice coil |
| 33779 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36462 | Clamp—Dial glass clamp (2 required) |
| 38823 | Decalcomania—Control panel decal |
| 38822 | Dial—Glass dial scale |
| 35915 | Escutcheon—Dial scale escutcheon—less dial and window glass |
| 38679 | Glass—Dial glass—plain |
| 36886 | Knob—Range switch or power switch knob |
| 36722 | Knob—Volume control or tuning knob |
| 30900 | Spring—Retaining spring for knobs |
| | **CV-42 ELECTRIFIER (No. 38700)** |
| 38702 | Ballast—Plug-in ballast tube resistor |
| 38701 | Capacitor—Electrolytic, comprising 1 section of 50 mfd., 150 volts, 1 section of 30 mfd., 150 volts, and 1 section of 100 mfd., 10 volts |
| 30847 | Capacitor—.05 mfd., 400 volts |
| 28451 | Cover—Insulating cover for electrolytic capacitor |
| 35069 | Fastener—Push fastener for bottom cover |
| 28452 | Plate—Bakelite mounting plate for electrolytic capacitor |
| 38702 | Resistor—Ballast tube resistor |
| 30730 | Resistor—2,700 ohms, ½ watt |
| 31027 | Socket—Power output socket |
| 31251 | Socket—Tube or ballast resistor socket |
| 38702 | Tube—Ballast tube resistor |

**MODEL B-52 (RC 1004-D)**

Same as 1004-A

Except

| | |
|---|---|
| 38900 | Plate - Dial plate complete with pulley and indicator - less dial. |
| 14138 | Resistor - 68,000 ohms, 1/4 watt |
| 38901 | Dial - Glass dial scale. |

## Alignment Procedure

Cathode Ray Alignment is the preferable method. Connections for the oscillograph are shown in the diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output as low as possible to avoid AVC action.

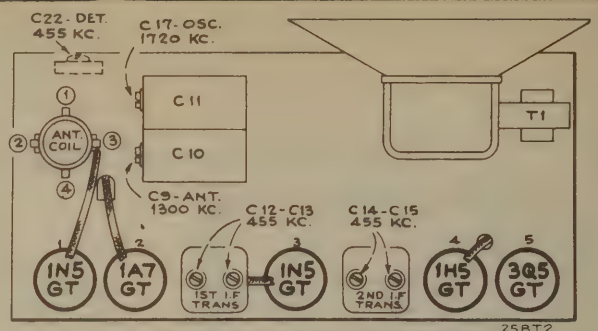
Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

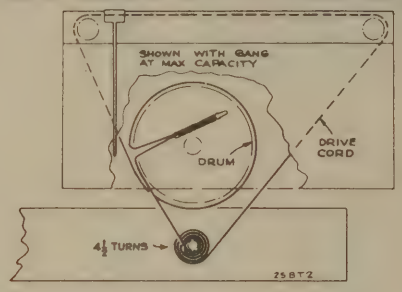
Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be set at the left-hand end dial calibration mark.

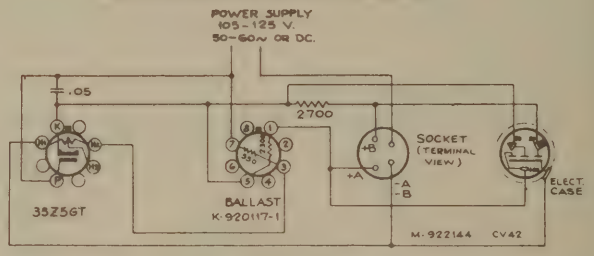
| Step | Connect high side of test osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | Quiet point between 550 and 750 kc | C14, C15 (2nd I-F Trans.) |
| 2 | 1st Det. grid in series with .01 mfd. | | | C12, C13 (1st I-F Trans.) |
| 3 | Antenna terminal in series with 200 mmfd. | 1,720 kc | Tuning condenser rotor plates all out | C17 (osc.) |
| 4 | | 1,300 kc | 1,300 kc signal | C9 (ant.) |
| 5 | | 455 kc | Quiet point between 550 and 750 kc | Adjust C22 for minimum output on strong 455 kc signal |

Precautionary Lead Dress.—

1. The lead from the 3Q5 plate to output transformer should be dressed under clip and away from audio input leads.
2. All filament wires should be dressed close to chassis.
3. Keep AVC lead connecting C1 to antenna coil away from the 1A7GT plate.
4. Keep blue plate leads coming from I.F. transformers short and close to chassis.
5. Keep yellow leads connecting to oscillator coil away from trap coil.
6. Keep grid lead of 1N5GT RF tube away from 1A7GT grid.



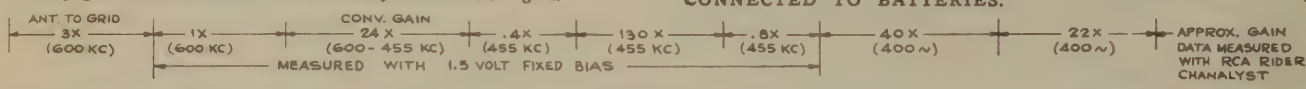



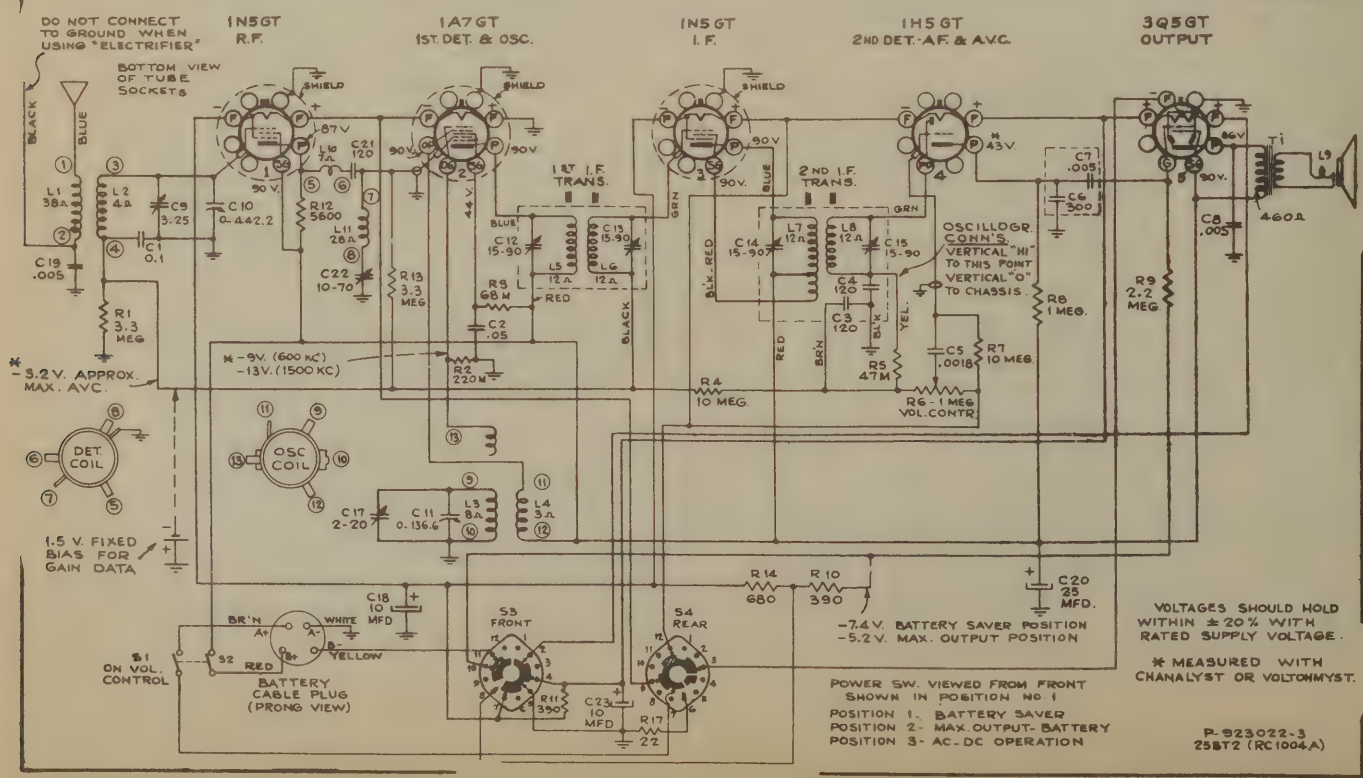




**Remove any external ground connections when using the Electrifier.**

**CAUTION: Turn power switch off (counter-clockwise) when installing or replacing tubes or batteries.**

**DO NOT TURN THE "BATTERY-ELECTRIC" SWITCH TO ELECTRIC POSITION WHILE THE RECEIVER IS CONNECTED TO BATTERIES.**

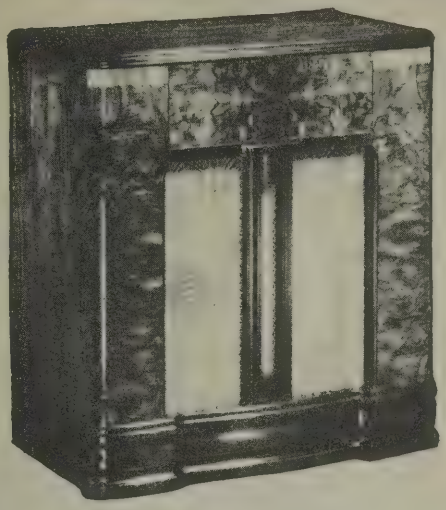

ANT. TO GRID
3X (600 KC)
1X (600 KC)
CONV. GAIN
24 X (600 - 455 KC)
.4X (455 KC)
130 X (455 KC)
.8X (455 KC)
40 X (400 ~)
22X (400 ~)
APPROX. GAIN DATA MEASURED WITH RCA RIDER CHANALYST
MEASURED WITH 1.5 VOLT FIXED BIAS



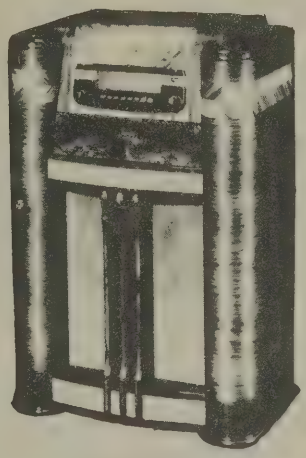
# MODELS U-25 U-26 98T and 98K2

Chassis No. RC-386B RC-386A

## Eight-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receivers



*Model U-25*



*Model 98K2*

*Model U-26*

## Electrical and Mechanical Specifications

**FREQUENCY RANGES**

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "Medium Wave" (B) | 2.3-7 mc |
| "Short Wave" (C) | 7-22 mc |
| Six Electric Tuning Positions | 550-1,500 kc |
| 2 stations between approximately 550- 950 kc (Buttons 1 and 2) | |
| 2 stations between approximately 690-1,225 kc (Buttons 3 and 4) | |
| 2 stations between approximately 890-1,500 kc (Buttons 5 and 6) | |
| Intermediate Frequency | 455 kc |

**RCA TUBE COMPLEMENT**

| | |
|---|---|
| (1) RCA-6A8-G | First Detector—Oscillator |
| (2) RCA-6K7 | Intermediate-Frequency Amplifier |
| (3) RCA-6Q7-G | Second Detector, 1st A-F, and A.V.C. |
| (4) RCA-6J5 | Phase Inverter |
| (5) RCA-6K6-G | Power Output |
| (6) RCA-6K6-G | Power Output |
| (7) RCA-6U5 | "Magic Eye" Tuning Indicator |
| (8) RCA-5Y3-G | Rectifier |
| Pilot Lamps (2) | Mazda 44, 6.3 volts, 0.25 amp. |

**POWER SUPPLY RATINGS**

| | |
|---|---|
| A | 105-125 volts, 50-60 cycles, 115 watts |
| B | 105-125 volts, 25-60 cycles, 115 watts |
| C | 100-130/140-160/200-250 volts, 40-60 cycles, 115 watts |

**POWER OUTPUT**

| | |
|---|---|
| Undistorted | 5 watts |
| Maximum | 5.5 watts |

**LOUDSPEAKER**

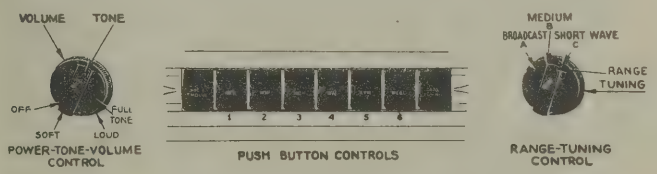
| | |
|---|---|
| Type | Electrodynamic |
| Diameter | 98T, 6 inches; 98K2, 12 inches |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |

**PHONOGRAPH U-25, U-26**

| | |
|---|---|
| Type RP-132 | Automatic |
| Record Capacity | Eight 10-inch or seven 12-inch |
| Turntable Speed | 78 r.p.m. adjustable |

**PICKUP**

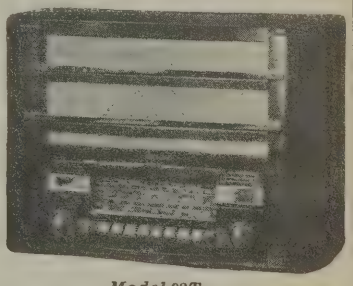
| | |
|---|---|
| Type | Crystal |
| Impedance | 100,000 ohms at 1,000 cycles |
| Average Output | 1.5 volts at 1,000 cycles across 500,000 ohm load |



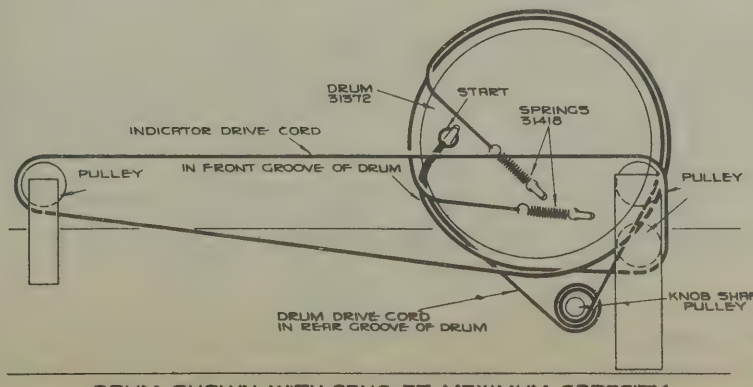

*Location of Controls*

The left-hand push button is a Victrola-Attachment switch.
The right-hand push button is for dial tuning.

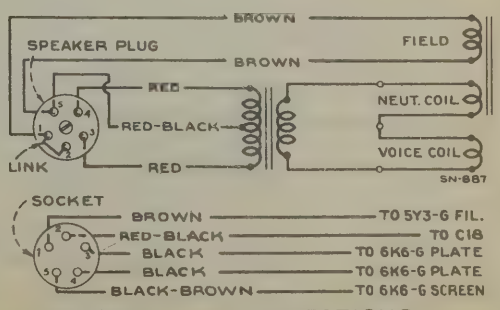
**REFER TO INDEX FOR DATA ON AUTOMATIC RECORD CHANGER**



*Model 98T*




DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY




SPEAKER PLUG CONNECTIONS

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed ⅛-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

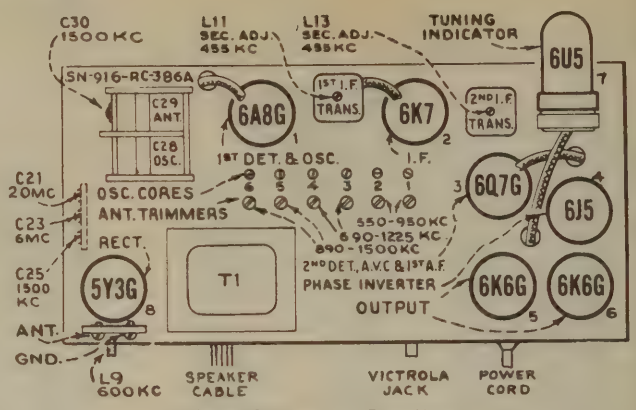
| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio-dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L12 and L13 (2nd I-F Transformer) |
| 2 | 6A8G det. grid cap, in series with .01 mfd. | 455 kc | | L10 and L11 (1st I-F Transformer) |
| 3 | Antenna Terminal, in series with 200 mmf. | 600 kc | 600 kc (150.5°) "A" band | L9 |
| 4 | | 1,500 kc | 1,500 kc (28°) "A" band | C25 (osc.) C30 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna Terminal, in series with 400 ohms. | 6 mc | 6 mc (26.5°) "B" band | C23 (osc.)* |
| 7 | | 20 mc | 20 mc (22°) "C" band | C21 (osc.)* |
| 8 | Follow "Adjustments for Electric Tuning." | | | |

*Use minimum capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.

Note.—Oscillator tracks 455 kc above signal on all bands.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, move the dial indicator on the drive cable to the left-hand end mark on dial, with gang condenser fully meshed.

For additional details, refer to booklet "RCA Victor Receiver Alignment."




*Tube and Trimmer Locations*

# Adjustments for Electric Tuning

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

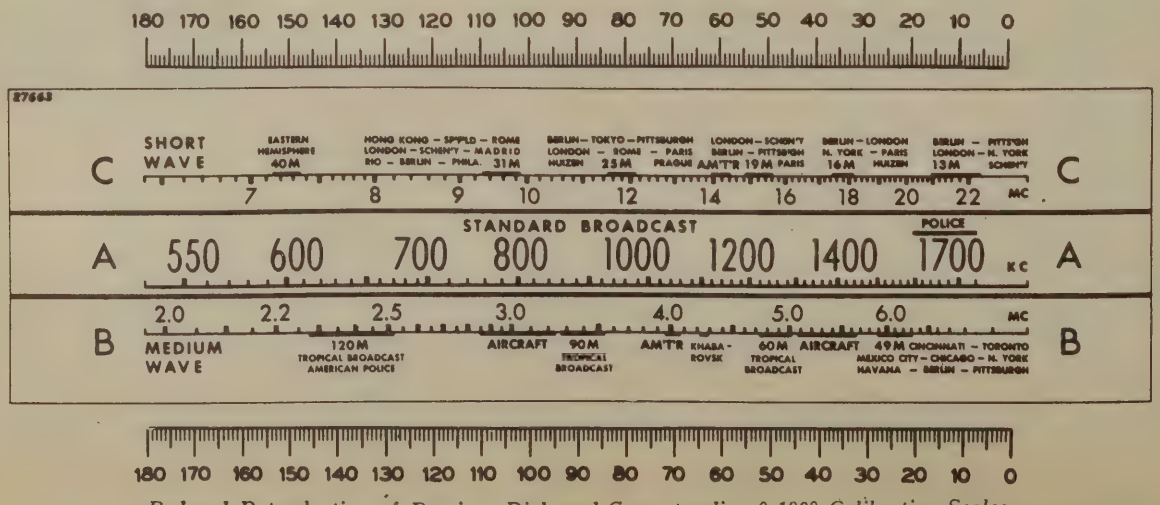
1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

**Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**

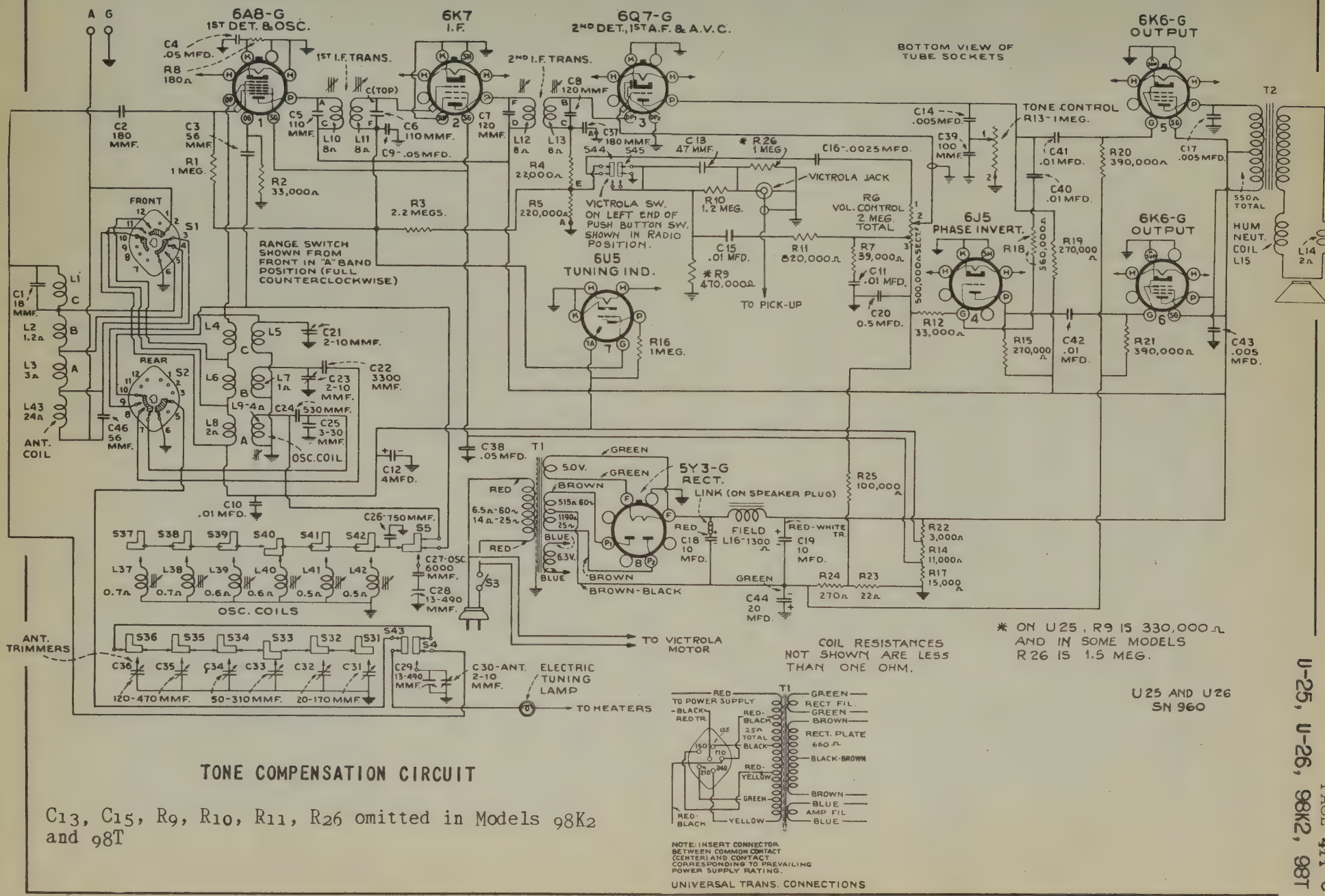
5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

**Precautionary Lead Dress.**—

1. Dress red leads from power transformer to power switch (S3), in corner of chassis and away from volume control terminals.
2. Dress brown lead from push-button switch to gang over end of switch, and away from C27 and bus between S5 and range switch.
3. Leads to C27 must be as short as possible.
4. Blue lead from range switch to oscillator coil must be as short as possible and dressed away from other leads. All leads should be dressed away from antenna coil.
5. Leads across back of chassis must be dressed under electrolytic away from Victrola jack.
6. Parts and leads should be dressed away from R22-R14 as it becomes heated.
7. Leads from oscillator coil to trimmers must be dressed away from coil.
8. Green lead from S4 to range switch must be clear of other leads and away from front edge of chassis.


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27663
C
SHORT WAVE
EASTERN HEMISPHERE 40M
HONG KONG – SPFLD – ROME
LONDON – SCHEN'Y – MADRID
RIO – BERLIN – PHILA. 31M
BERLIN – TOKYO – PITTSBURGH
LONDON – ROME – PARIS
LUXEMBURG 25M PRAGUE
LONDON – SCHEN'Y
BERLIN – PITTSBURGH
PARIS AM'T'R 19M
BERLIN – LONDON
N. YORK – PARIS
16M LUXEMBURG
BERLIN – PITTSBURGH
LONDON – N. YORK
13M SCHEN'Y
C
7 8 9 10 12 14 16 18 20 22 MC
STANDARD BROADCAST
POLICE
A
550 600 700 800 1000 1200 1400 1700 KC
A
2.0 2.2 2.5 3.0 4.0 5.0 6.0 MC
B
MEDIUM WAVE
120M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90M TROPICAL BROADCAST
AM'T'R KHABAROVSK
60M TROPICAL BROADCAST
AIRCRAFT
49M CINCINNATI – TORONTO MEXICO CITY – CHICAGO – N. YORK HAVANA – BERLIN – PITTSBURGH
B
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

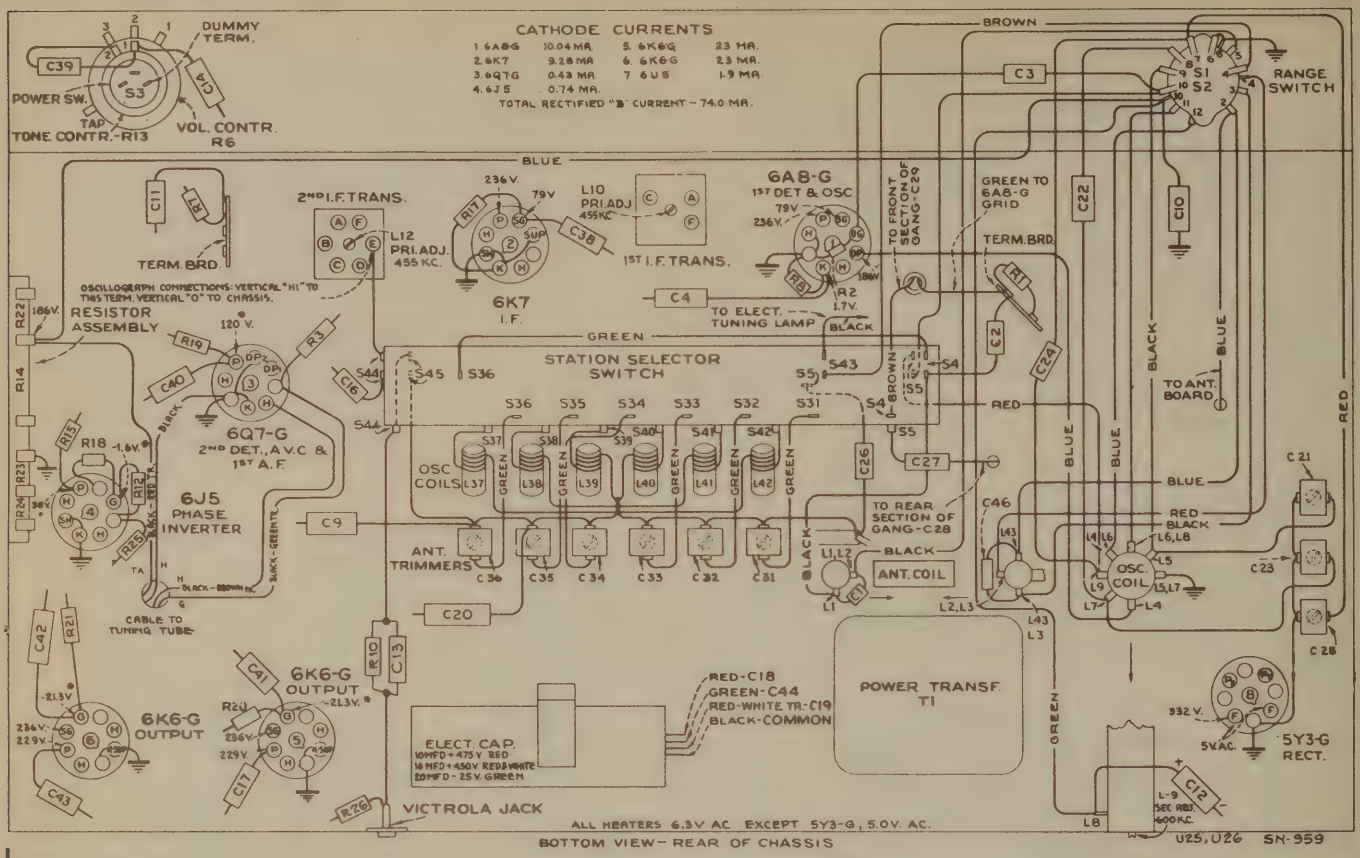



## TONE COMPENSATION CIRCUIT

C13, C15, R9, R10, R11, R26 omitted in Models 98K2 and 98T




UNIVERSAL TRANS. CONNECTIONS




*R-F Wiring Diagram and Socket Voltages*

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within ±20% with 117-volt a-c supply.

* **NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

## Replacement Parts MODELS 98K2 & 98T

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-386-A)** |
| | **MODELS 98K2 AND 98T** |
| | Same as Models U-25 and U-26 |
| | **EXCEPT** |
| 30766 | Cap - Rubber cap for Magic Eye |
| 30406 | Capacitor - 100 mmfd (C39) |
| 32668 | Control - Volume control, tone control and power switch (R6, R13, S3) |
| 32670 | Plate - Dial color plate. |
| 32671 | Shaft - Tuning drive shaft and pulley. |
| 31199 | Shield - Dial lamp shield. |
| 31365 | Socket - Insulated socket for electric tuning indicator lamp. |
| 32669 | Switch - Range switch (S1, S2) |
| | C13, C15, R9, R10, R11, R28 not used in Models 98K2 and 98T. |

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (RL-70H-5) MODEL 98K2** |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (114) |
| 31539 | Plug—5-contact male plug for speaker |
| 32146 | Speaker complete |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **SPEAKER ASSEMBLIES (84308-3) MODEL 98T** |
| 32689 | Coil—Speaker field coil (L16) |
| 32688 | Cone—Cone and voice coil mounted and centered on housing (L14) |
| 31539 | Plug—5-contact plug or speaker |
| 32687 | Speaker—Speaker complete |
| 32690 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31397 | Button—Station selector push button |
| 31456 | Covers—8 Protective covers for push button markers |
| 32673 | Dial—Station selector glass dial |
| 32674 | Escutcheon—Station selector escutcheon — less push buttons |
| 31355 | Knob—Range switch knob |
| 31391 | Knob—Tone control knob |
| 14359 | Knob—Tuning knob |
| 30773 | Knob—Volume control knob |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31457 | Marker—"Record Player" push button marker |
| 31589 | Marker—Station markers |
| 30330 | Spring for tone control knob |
| 4982 | Spring for tuning knob |
| 14270 | Spring for volume control or range switch knob |

# REPLACEMENT PARTS MODELS U25 & U26

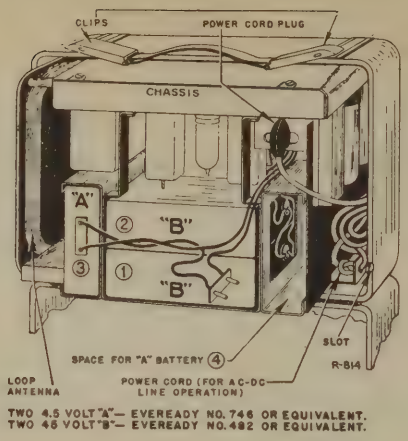
**Insist on genuine factory-tested parts, which are readily indentified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-386-B)** |
| 14517 | Board—Antenna ground terminal board |
| 30752 | Bracket—Magic Eye mounting bracket |
| 31400 | Capacitor—Triple adjustable trimmer, two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25) |
| 32486 | Capacitor—Antenna coil trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36) |
| 12722 | Capacitor—18 mmfd. (C1) |
| 13141 | Capacitor—47 mmfd. (C13) |
| 12723 | Capacitor—56 mmfd. (C3, C46) |
| 12720 | Capacitor—100 mmfd. (C39) |
| 14262 | Capacitor—109 mmfd. (C5, C6) |
| 12404 | Capacitor—120 mmfd. (C7, C8) |
| 13003 | Capacitor—180 mmfd. (C37) |
| 14712 | Capacitor—180 mmfd. (C2) |
| 32492 | Capacitor—530 mmfd. (C24) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 4881 | Capacitor—3,300 mmfd. (C22) |
| 31405 | Capacitor—6,000 mmfd. (C27) |
| 5107 | Capacitor—.0025 mfd. (C16) |
| 4838 | Capacitor—.005 mfd. (C14, C17, C43) |
| 4858 | Capacitor—.01 mfd. (C10, C40, C41, C42) |
| 14393 | Capacitor—.01 mfd. (C11, C15) |
| 30882 | Capacitor—.05 mfd. (C4, C9, C38) |
| 30867 | Capacitor—0.5 mfd. (C20) |
| 32145 | Capacitor—4 mfd. (C12) |
| 32142 | Capacitor—Comprising two 10 mfd., one 20 mfd. sections (C18, C19, C44) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 32493 | Coil—Antenna coil—A, B, and C bands (L1, L2, L3, L43) |
| 31951 | Coil—Oscillator coil—A, B, and C bands (L4, L5, L7, L9) |
| 31383 | Coil—Oscillator coil—A band (L41, L42) |
| 32487 | Coil—Oscillator coil— A band (L39, L40) |
| 31385 | Coil—Oscillator coil—A band (L37, L38) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 32635 | Cord—Indicator pointer drive cord |
| 32634 | Cord—Variable condenser drum drive cord |
| 30905 | Core—Adjustable core and stud for i-f transformer |
| 31386 | Core—Adjustable core and stud for oscillator coil, Stock Nos. 31383, 32487, and 31385 |
| 12800 | Core—Adjustable core for oscillator coil, Stock No. 31951 |
| 31372 | Drum—Variable condenser drive cord drum and calibration dial |
| 11891 | Lamp—Phono. compartment lamp |
| 31480 | Lamp—Dial and "Electric Tuning" lamp |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact female plug for speaker cable. |
| 31373 | Pulley—Drive cord pulley |
| 32143 | Resistor—Voltage divider comprising one 11,000 ohm, one 3,000 ohm, one 22 ohm, and one 270 ohm sections (R14, R22, R23, R24) |
| 30545 | Resistor—180 ohms, ½ watt (R8) |
| 5114 | Resistor—15,000 ohms, 1 watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2, R12) |
| 12266 | Resistor—39,000 ohms, ½ watt (R7) |
| 14560 | Resistor—100,000 ohms, ½ watt (R25) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R15, R19) |
| 14983 | Resistor—330,000 ohms, ½ watt (R9) |
| 13479 | Resistor—390,000 ohms, ½ watt (R20, R21) |
| 12486 | Resistor—560,000 ohms, ½ watt (R18) |
| 30963 | Resistor—820,000 ohms, ½ watt (R11) |
| 12013 | Resistor—1 meg., 1/10 watt (R16) |
| 13730 | Resistor—1 meg., ½ watt (R1, R26) |
| 30208 | Resistor—1.2 meg., ½ watt (R10) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Retaining spring for station selector knob shaft |
| 14887 | Retainer—Drive cord pulley retainer |
| 4669 | Screw—No. 8-32 square head set screw for drum, Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 3682 | Shield—Tube shield |
| 30868 | Socket—2-contact female socket for motor power cable |
| 12493 | Socket—5-contact female socket for speaker cable |
| 13871 | Socket—Magic Eye socket |
| 14278 | Socket—Pickup input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Indicator or drum drive cord tension spring |
| 32491 | Switch—Range switch (S1, S2) |
| 32498 | Switch—Station selector push-button switch and Radio-Record switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 14376 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 14283 | Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4. R5) |
| 31445 | Transformer—Power transformer 105-125 volts, 25-60 cycles (T1) |
| 31446 | Transformer—Power transformer 100-130/140-160/200-250 volts, 50-60 cycles (T1) |
| 32144 | Transformer—Power transformer 105-125 volts, 50-60 cycles (T1) |
| | **SPEAKER ASSEMBLIES (RL-70H-5)** |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31539 | Plug—5-contact male plug for speaker |
| 32146 | Speaker complete |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **MISCELLANEOUS ASSEMBLIES** |
| 12038 | Band—Rubber band for Magic Eye |
| 31397 | Button—Station selector push-button |
| 13103 | Cap—Pilot light jewel |
| 31456 | Cover—8 protective covers for push-button markers |
| 31541 | Cushion—Motor plate mounting cushions and clamps sufficient for one instrument |
| 32495 | Dial—Glass dial scale (Model U25 only) |
| 32494 | Dial—Glass dial scale (Model U26 only) |
| 31407 | Escutcheon—Magic Eye or Electric Tuning indicator escutcheon |
| 31395 | Escutcheon—Tuning dial escutcheon only, less push-buttons and dial scale |
| 30698 | Hinge—Lid hinge complete with screws |
| 4585 | Hinge—One upper and one lower door hinge (Model U26 only) |
| 31564 | Holder—Needle card holder |
| 31543 | Indicator—Electric tuning indicator disc |
| 31392 | Indicator—Indicator pointer, carriage and clip |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31460 | Marker—"Dial Tuning" push-button marker (Model U25 only) |
| 31458 | Marker—"Dial Tuning" push-button marker (Model U26 only) |
| 31459 | Marker—"Victrola" push-button marker (Model U25 only) |
| 31457 | Marker—"Victrola" push-button marker (Model U26 only) |
| 31590 | Markers—1 set station call letter markers (Model U25 only) |
| 31589 | Markers—1 set station call letter markers (Model U26 only) |
| 11210 | Screw—Chassis mounting, screws, washers, and lockwashers |
| 31393 | Screen—Dial color screen |
| 32870 | Screen—Phono. compartment lamp screen |
| 33083 | Spring—Actuating spring for lid support (Model U26 only) |
| 30330 | Spring—Retaining spring for knob, Stock No. 31391 |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 30773 and 31355 |
| 4982 | Spring—Retaining spring for knob, Stock No. 14359 |
| 31470 | Spring—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 req'd) |
| 33081 | Support—Right-hand lid support (Model U26 only) |
| 33082 | Support—Left-hand lid support (Model U26 only) |
| 31478 | Support—Lid support (Model U25) |

FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON **RP-132**

# MODEL 26BP PORTABLE

## Chassis No. RC-559




TWO 4.5 VOLT "A"— EVEREADY NO. 746 OR EQUIVALENT.
TWO 45 VOLT "B"— EVEREADY NO. 482 OR EQUIVALENT.

## Specifications

Frequency Range ..... 540-1,600 kc
Intermediate Frequency ..... 455 kc
110 to 125 volts, AC 50 or 60 cycles, or DC ..... 30 watts

BATTERIES REQUIRED

"A" two 4.5 volt dry plug-in type "A," (Eveready No. 746 or equivalent)
"B" two 45 volt dry plug-in type "B," (Eveready No. 482 or equivalent)

CURRENT CONSUMPTION

Battery Operation ..... "A" 0.05 amperes, "B" 15 milliamperes
Total Rect. "B" (117 volt, 60 cycle) ..... 16 mils.
Total Rect. "A" (117 volt, 60 cycle) ..... 42 mils.

POWER OUTPUT

Undistorted ..... .19 watt Maximum ..... .32 watt

LOUDSPEAKER ..... 5-inch permanent-magnet dynamic

CABINET DIMENSIONS

Height ..... 9 inches, Width ..... 11¾ inches, Depth ..... 5⅞ inches

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-559)** |
| 38775 | Capacitor—Electrolytic comprising 1 section of 40 mfd., 25 volts, and 1 section of 160 mfd., 25 volts |
| 38910 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts, 1 section of 20 mfd., 150 volts, and 1 section of 10 mfd., 150 volts |
| 39043 | Capacitor—6.8 mmfd.—ceramic |
| 39044 | Capacitor—15 mmfd.—ceramic |
| 12896 | Capacitor—15 mmfd.—moulded |
| 39041 | Capacitor—18 mmfd.—ceramic |
| 39042 | Capacitor—47 mmfd.—ceramic |
| 12723 | Capacitor—56 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 12488 | Capacitor—270 mmfd. |
| 37705 | Capacitor—.0015 mfd. |
| 36854 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd., 300 volts |
| 4839 | Capacitor—0.1 mfd., 400 volts |
| 38774 | Coil—Choke coil |
| 70052 | Coil—Oscillator coil |
| 38912 | Coil—R.F. coil |
| 38903 | Condenser—Variable tuning condenser |
| 38915 | Control—Volume control and power switch |
| 32634 | Cord—Pointer cord (Approx. 30-in. overall lgth.) |
| 38920 | Core—Adjustable core and stud for I.F. transformer—adjusted from the bottom of I.F. |
| 38921 | Core—Adjustable core and stud for I.F. transformer—adjusted from the top of I.F. |
| 36606 | Core—Adjustable core and stud for oscillator coil |
| 38914 | Disc—Tuning disc complete with bracket and drive cord pulleys |
| 38919 | Disc—Tuning or volume control disc |
| 38918 | Indicator—Station selector indicator |
| 38916 | Loop—Antenna loop complete—less capacitor |
| 38913 | Plate—Dial back plate |
| 38776 | Plug—2 prong male plug for "A" battery cable. |
| 32641 | Plug—3 prong male plug for "B" battery cable. |
| 36230 | Pulley—Pointer cord pulley |
| 38908 | Resistor—Voltage divider—2,700 ohms, 7 watt. |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 12194 | Resistor—1,800 ohms, ½ watt |
| 14421 | Resistor—2,700 ohms, 1 watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14020 | Resistor—150,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30652 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 38904 | Socket—2 contact female socket for A.C. line |
| 38917 | Socket—2 contact female socket for loop cable |
| 38911 | Socket—Tube socket—moulded—for minature base tubes |
| 31251 | Socket—Tube socket—wafer—for standard base tubes |
| 32481 | Spring—Pointer cord spring |
| 38922 | Spring—Tension spring for adjustable core and stud |
| 38905 | Switch—Battery change switch |
| 38906 | Transformer—First I.F. transformer |
| 38907 | Transformer—Second I.F. transformer |
| 36098 | Transformer—Output transformer |
| 70022 | POWER CORD |
| | **SPEAKER ASSEMBLIES (RL-81B2)** |
| 35570 | Cone—Cone complete with voice coil |
| | (92161-3) |
| 38352 | Cone—Cone complete with voice coil |
| | (92161-4) |
| 39535 | Cone—Cone complete with voice coil |
| | (92161-5) |
| 38352 | Cone—Cone complete with voice coil |
| | (92322-2) |
| 39536 | Cone—Cone complete with voice coil |
| | (92374-1) |
| 39537 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39962 | ROLL COVER |
| 39146 | Clamp—Dial clamp |
| 39385 | Dial—Dial scale |
| 38990 | Feet—Rubber feet for 1 case |
| 39692 | Grille—Perforated grille |
| 38989 | Grille—Speaker baffle |
| 39833 | Handle—Leather strap handle |
| 39963 | HANDLE-ROLL COVER |
| 70009 | LOOP- EXTERNAL LOOP |
| 39378 | Cup—Suction cup |
| 39377 | Fastener—Snap fastener to attach external antenna to case |
| 39379 | Plug—2 prong male plug for loop cable |

## Alignment

With gang in full mesh, the pointer should be 1/16-inch to the left of the 550 kc dial mark.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | L10, L11 (2nd I-F trans.) |
| 2 | 1st-Det. grid cap, in series with .01 mfd. | | | L8, L9 (1st I-F trans.) |
| 3 | radiated signal at 1,600 kc | 1,600 kc | 1,600 kc | C7 (osc.) C3 (ant.) C13 (det.) |
| 4 | radiated signal 600 kc | 600 kc | 600 kc | L5 (Rock in) |
| 5 | Repeat steps 3 and 4 | | | |

**AC-DC Operation.—**

This receiver will operate on 105 to 125 volts, AC 50 or 60 cycles, or DC.

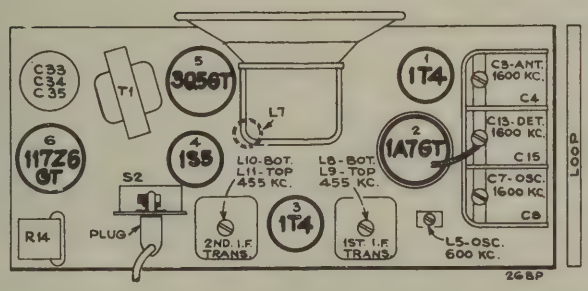
A power cord is housed in the bottom right hand corner looking inside the cabinet as shown in the illustration. Open the cabinet like a suit case, first pushing to one side the little pins under the handle ends to raise the clips. Then pull the power cord plug out of its socket in the top right hand corner as shown, and take out and unroll the power cord. A slot in the bottom allows the closing of the cabinet with the power cord passing through. Close the cabinet with the cord extending and insert the plug into a convenient electrical outlet.

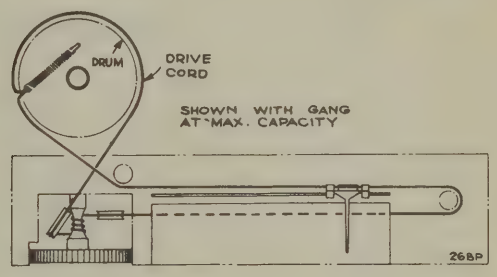
When returning to battery operation, be sure to replace the power plug in its socket inside the case with the cord rolled up.

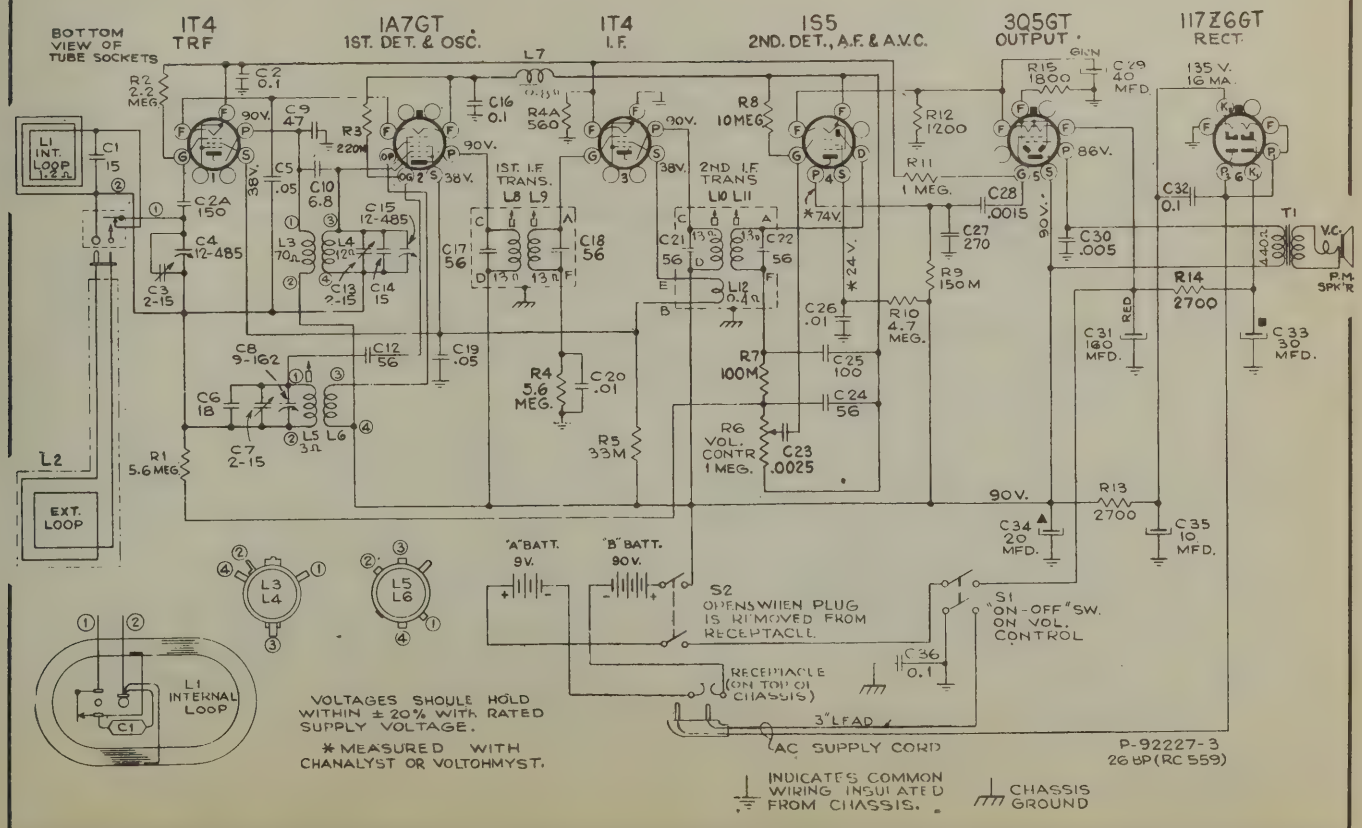
*NOTE.—If reception is not obtained on DC, reverse plug in outlet receptacle. This may also reduce hum on AC operation.*

**Using External Loop.—**

A loop antenna is housed inside the cabinet. Under normal conditions this will give satisfactory reception. If however the receiver is used in a location remote from broadcasting stations where signals are weak, or where interference is excessive, or in a shielded compartment such as an automobile, airplane or railroad train, an RCA Magic Wave Magnifier Antenna with suction cup fastener may be purchased from your dealer. This antenna has a strap connector cord ending in a two-prong plug for attachment to the loop antenna frame. Open the case, plug the antenna cord into the socket (it will only go in one way), bring the strap out at the slot in the case and attach the Antenna by means of the suction cup to any convenient vertical surface. The RCA Magic Wave Magnifier may be attached inside the back case, when not in use, by means of three snap fasteners..



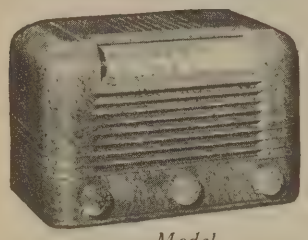



# MODELS 26X-1, 26X-3 26X-4 & RADIOLA 515

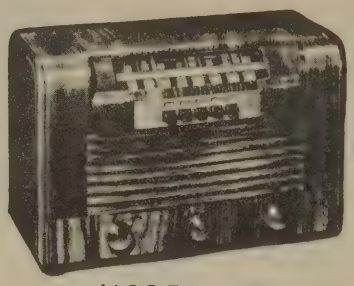
Chassis No. RC-1014 RC-1014A RC-1014B (2ND PROD.) RC-1014A

## Six-Tube, Two-Band, AC-DC, Superheterodyne Receivers



*Model 26X-1*

*Model 26X-3*



MODEL 26X4

RADIOLA MODEL 515

## Electrical and Mechanical Specifications

FREQUENCY RANGE

| | |
|---|---|
| Broadcast | 540-1,720 kc |
| Short Wave | 8.7-15.6 mc |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-12SG7 | R-F Amplifier |
| (2) RCA-12SA7 | 1st Det.—Osc. |
| (3) RCA-12SK7 | I-F Amplifier |
| (4) RCA-12SQ7 | 2nd Det., A.V.C., and A-F Amplifier |
| (5) RCA-35L6-GT | Power Output |
| (6) RCA-35Z5-GT | Rectifier |

POWER SUPPLY RATING

105-125 volts, AC, 50 or 60 cycles, or DC ..... 30 watts

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp

POWER OUTPUT

| | |
|---|---|
| Undistorted | 0.9 watts |
| Maximum | 1.4 watts |

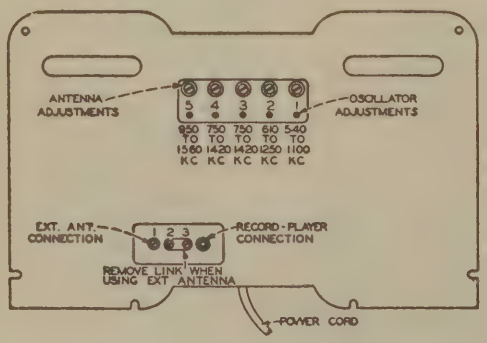
LOUDSPEAKER RL-81B2 "PM," or RL-86B1, "EM."

| | |
|---|---|
| Size | 5-inch |
| V.C. Impedance | 4 ohms at 400 cycles |

PUSH-BUTTON RANGES 26X4

| | |
|---|---|
| One station between approximately | 540-1,100 kc |
| One station between approximately | 610-1,250 kc |
| Two stations between approximately | 750-1,420 kc |
| One station between approximately | 950-1,560 kc |

## Push Button Adjustment MODEL 26 X 4



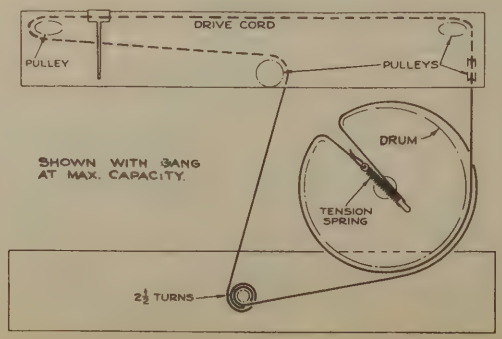

The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station.
4. After oscillator core is set correctly, adjust No. 1 antenna trimmer for maximum output.

   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On the 950 to 1,560 kc push-button, the higher frequency stations may be received with L24 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.



# Alignment Procedure

**Test Oscillator.**—For all alignment operations, keep the output as low as possible to avoid a.v.c. action.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

**Power Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

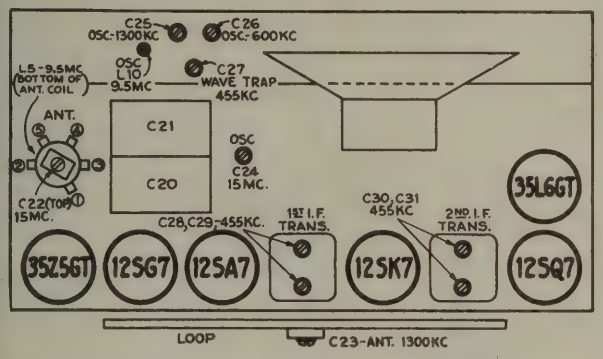
**Precautionary Lead Dress**

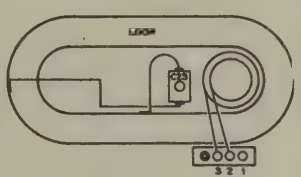
1. Dress output tube plate lead to speaker and output bypass condenser away from terminal board and yellow lead in cable.
2. Dress brown and yellow leads from 2nd I.F. transformer away from output plate and bypass condenser.
3. Dress .02 capacitor C12 away from output capacitor C16.
4. Dress all leads or parts as far as possible away from oscillator coil.
5. Dress lead from C13 to band switch down along front apron of chassis.
6. Dress lead from trimmer condenser on loop to S.W. Ant. coil around outside of rectifier tube. Other leads between rectifier and R.F. tube.

| Steps | Connect high side of the test oscillator to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I.F. grid in series with 0.1 mfd. | 455 kc | Quiet Point at 1,700 kc end of dial | C30, C31 2nd I-F trans. |
| 2 | 1st det. grid in series with 0.1 mfd. | | | C-28, C-29 1st I-F trans. |
| 3 | R.F. grid in series with 0.1 mfd. | | | C-27** Wave trap |
| 4 | Ant. terminal in series with 47 mmf. (link open) | 15 mc | 15 mc "C" Band | C-24 (osc.)* C-22 (ant.) |
| 5 | | 9.5 mc | 9.5 mc "C" Band | L-10 (osc.) L-5 (ant.) |
| 6 | | Repeat steps 4 and 5. | | |
| 7 | Ant. terminal in series with 220 mmf. (link open) | 1,300 kc | 1,300 kc "A" Band | C-25 (osc.) C-23 (ant.) |
| 8 | | 600 kc | 600 kc "A" Band | C-26 (osc.) |
| 9 | | Repeat steps 7 and 8. | | |

*Use minimum capacity peak if two peaks can be obtained.
**Adjust C-27 for minimum signal with 455 kc applied to R.F. grid.

Note.—Oscillator tracks 455 kc above signal on all bands.



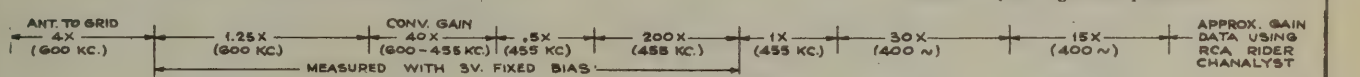

## 26X-1, -3, -4

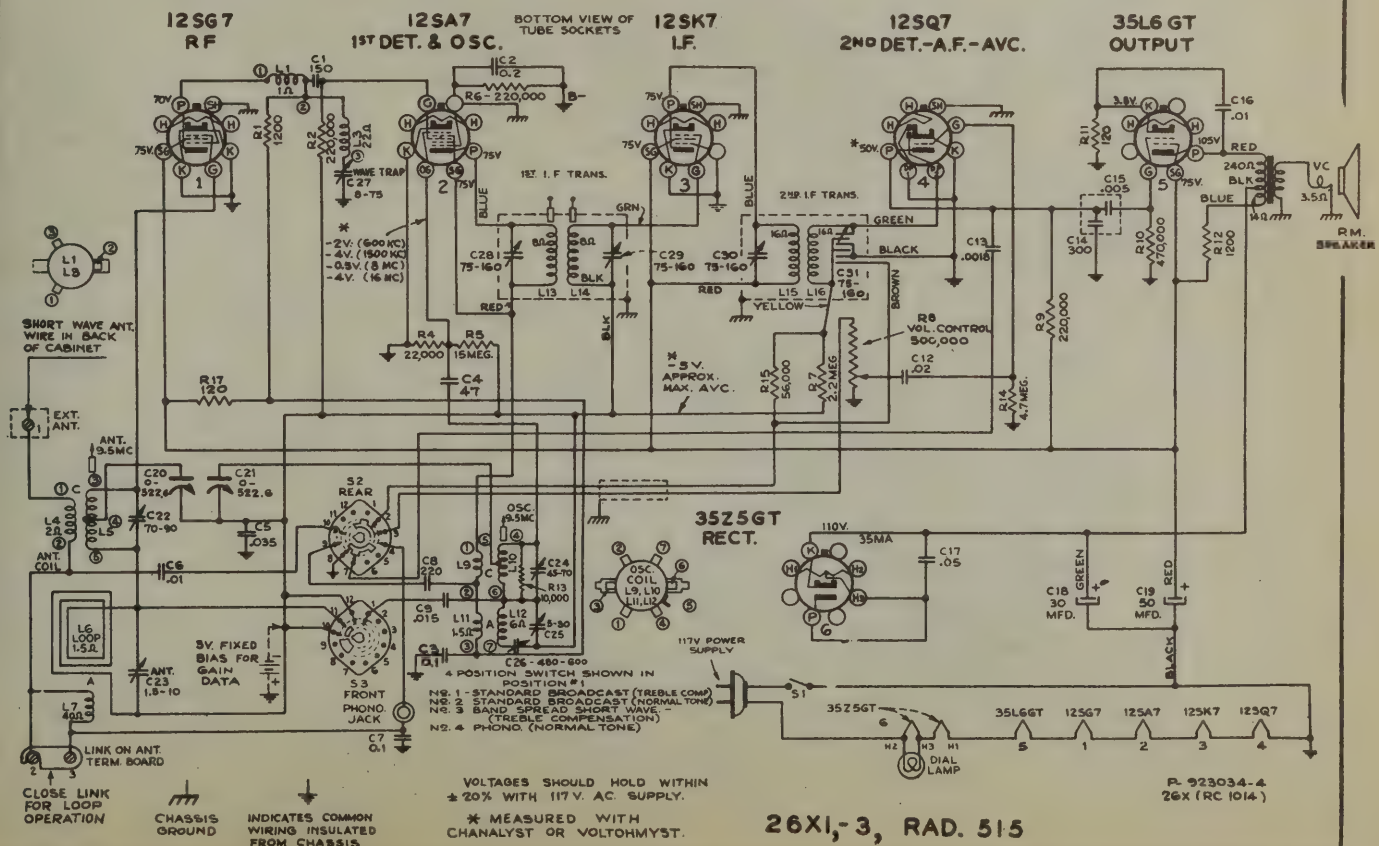
### Changes in 2nd Production:

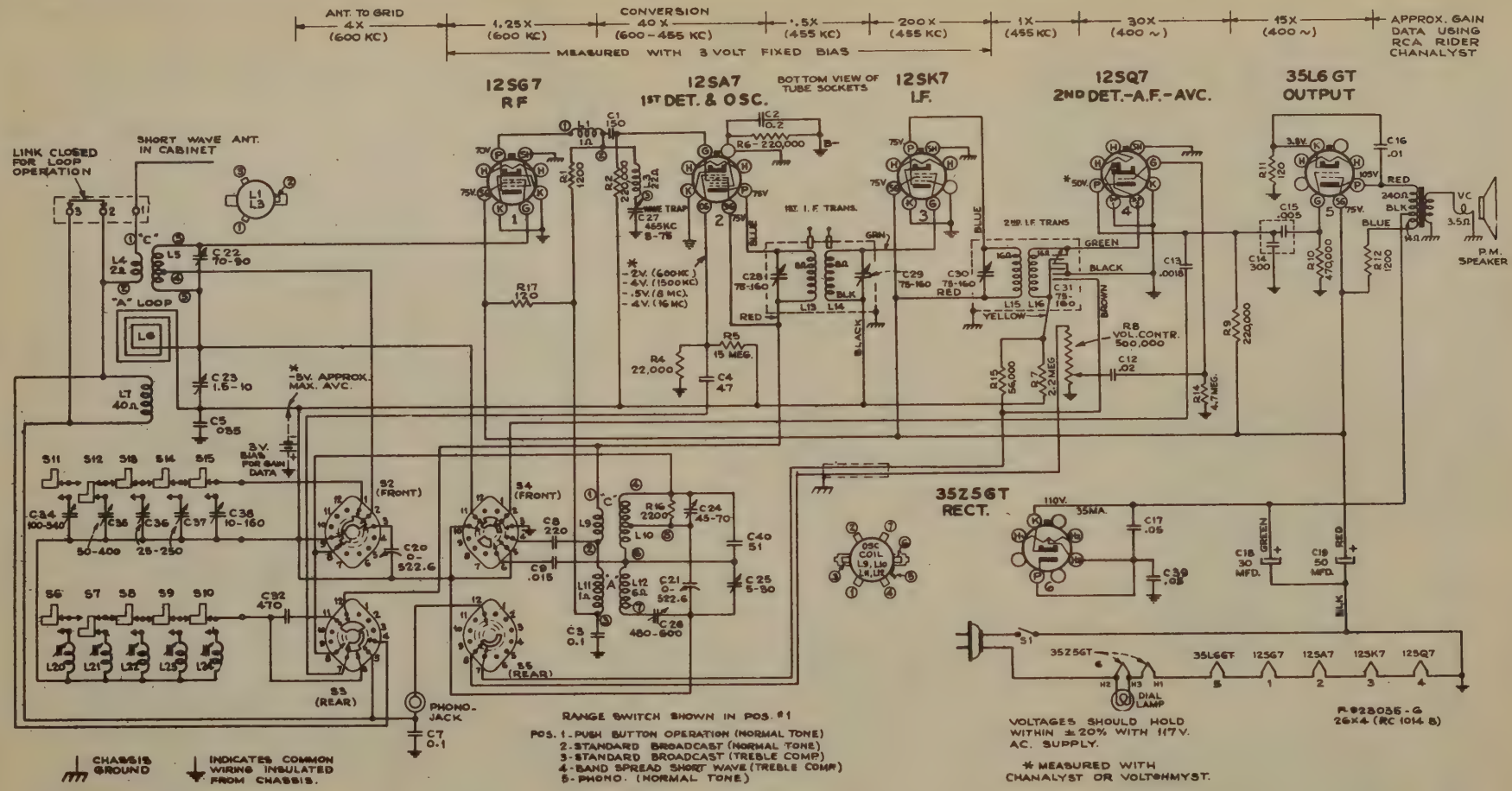
In 26X-1 and 26X-3, a 10-mmfd. capacitor, Stock No. 13200, is added in parallel to C24 in the "C" band oscillator circuit.

The Stock No. for C4 (47 mmfd.) oscillator grid capacitor is 13141.

The adjustable core on L5 antenna coil is omitted, and this adjustment is therefore omitted in the alignment procedure.





12SG7 RF
12SA7 1ST DET. & OSC.
BOTTOM VIEW OF TUBE SOCKETS
12SK7 I.F.
12SQ7 2ND DET.-A.F.-AVC.
35L6 GT OUTPUT
1ST I.F. TRANS.
2ND I.F TRANS.
WAVE TRAP C27 8-75
SHORT WAVE ANT. WIRE IN BACK OF CABINET
EXT. ANT.
ANT. 9.5MC
ANT. COIL
L6 LOOP 1.5Ω
ANT. C23 1.8-10
3V. FIXED BIAS FOR I-F GAIN DATA
S3 FRONT PHONO. JACK
LINK ON ANT. TERM. BOARD
CLOSE LINK FOR LOOP OPERATION
S2 REAR
OSC. COIL L9, L10, L11, L12
C26 480-600
4 POSITION SWITCH SHOWN IN POSITION #1
NO. 1 - STANDARD BROADCAST (TREBLE COMP.)
NO. 2 STANDARD BROADCAST (NORMAL TONE)
NO. 3 BAND SPREAD SHORT WAVE (TREBLE COMPENSATION)
NO. 4 PHONO. (NORMAL TONE)
3525GT RECT.
117V POWER SUPPLY
S1
DIAL LAMP
35L6GT 12SG7 12SA7 12SK7 12SQ7
R8 VOL. CONTROL 500,000
R.M. SPEAKER
CHASSIS GROUND
INDICATES COMMON WIRING INSULATED FROM CHASSIS
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
P-923034-4
26X (RC 1014)




**Critical Lead Dress**

1. Dress grid lead to IF amp. tube back into shield can and plate lead from same tube back into shield can to keep exposed length as short as possible.
2. Dress output tube plate lead to speaker and output bypass condenser away from terminal board and yellow lead in cable.
3. Dress brown and yellow leads from 2nd IF transformer away from output plate and bypass condenser.
4. Dress .02 capacitor C12 away from output capacitor C16.
5. Dress all leads or parts as far as possible away from oscillator coil.
6. Dress lead from C13 to band switch down along front apron of chassis.
7. Dress lead from trimmer condenser on loop to S.W. Ant. coil around outside of rectifier tube. Other leads between rectifier and RF tube.
8. Dress lead to contact No. 11 on front wafer of switch away from audio leads.

## MODEL 26X-4

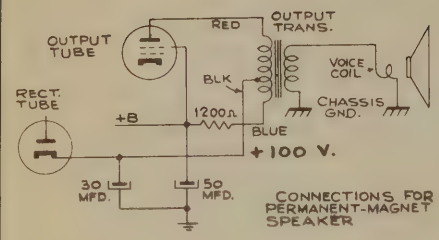
# Replacement Parts



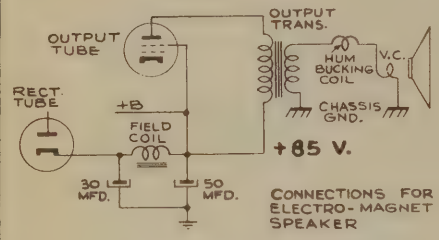
Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (26X1 RC-1014 ) (26X3 RC-1014A)** |
| 36947 | Board—Loop receptacle and terminal board |
| 36301 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd. and 1 section of .0003 mfd. |
| 38691 | Capacitor—Adjustable capacitor—55-75 mmfd. (C24) |
| 38692 | Capacitor—Adjustable capacitor—90-110 mmfd. (C22) |
| 38693 | Capacitor—Adjustable capacitor—comprising 1 section of 8-75 mmfd., 1 section of 48-600 mmfd., and 1 section of 5-30 mmfd. (C27, C26, C25) |
| 39327 | Capacitor—2-20 mmf. (C23) |
| 12948 | Capacitor—33 mmfd. |
| 12725 | Capacitor—150 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 38686 | Coil—Antenna coil |
| 38690 | Coil—Filter coil |
| 35096 | Coil—Loop primary coil |
| 38685 | Coil—Oscillator coil |
| 38689 | Condenser—Variable tuning condenser |
| 38410 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 50-in. overall length) |
| 38694 | Core—Adjustable core and stud for antenna and oscillator coils |
| 36237 | Drum—Drive Drum |
| 37068 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 38769 | Loop—Antenna loop |
| 38767 | Plate—Dial back plate complete with pulleys—less dial |
| 36230 | Pulley—Drive cord pulley |
| 30189 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 34767 | Resistor—2,200 ohms, ½ watt |
| 3078 | Resistor—10,000 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 38785 | Resistor—15 meg., ½ watt |
| 36897 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 37605 | Socket—Tube socket—moulded type |
| 31251 | Socket—Tube socket—wafer type |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for core and stud |
| 38687 | Switch—Range switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 36800 | Transformer—Output transformer (for RL-81-B2) |
| 38994 | Transformer—Output transformer (for RL-86-B1) |
| 33726 | Washer—"C" washer for tuning shaft |
| | **"PM" SPEAKER ASSEMBLIES (RL-81B-2)** |
| 35570 | Cone—Cone complete with voice coil |
| | **SPEAKER ASSEMBLIES ("EM" RL-86-B1)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil, 350 ohms |
| 39447 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38695 | Back—Cabinet back for Model 26X1 |
| 38993 | Back—Cabinet back for Model 26X3 |
| Y947 | Cabinet—Moulded cabinet for Model 26X1 |
| 36873 | Clamp—Dial clamp for Models 26X3 |
| 36890 | Clamp—L.H. dial clamp for Model 26X1 |
| 36891 | Clamp—R.H. dial clamp for Model 26X1 |
| 38874 | Decalcomania—Control panel decal for Model 26X3 |
| 38839 | Dial—Glass dial scale |
| 37831 | Fastener—Push-on fastener for back |
| 36722 | Knob—Control knob (tuning, volume, or range) for 26X1, or volume or tuning knob for 26X3. |
| 36886 | Knob—Range switch knob for 26X3 |
| 30900 | Spring—Retaining spring for knobs |

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (26X4 RC-1014B)** |
| 36947 | Board—Loop receptacle and terminal board |
| 36301 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts and 1 section of 50 mfd., 150 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd. and 1 section of .0003 mfd. |
| 38691 | Capacitor—Adjustable capacitor—55-75 mmfd. (C24) |
| 38692 | Capacitor—Adjustable capacitor—90-110 mmfd. (C22) |
| 38693 | Capacitor—Adjustable capacitor—comprising 1 section of 8-75 mmfd., 1 section of 48-600 mmfd., and 1 section of 5-30 mmfd. (C27, C26, C25) |
| 39327 | Capacitor—2-20 mmfd. (C23) |
| 38726 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 12948 | Capacitor—33 mmfd. |
| 39540 | Capacitor—51 mmfd. |
| 12725 | Capacitor—150 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 30433 | Capacitor—470 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 38813 | Coil—Antenna coil |
| 38690 | Coil—Filter coil |
| 35096 | Coil—Loop primary coil |
| 38685 | Coil—Oscillator coil |
| 37638 | Coil—P.B. oscillator coil—540-1,100 K.C. |
| 35803 | Coil—P.B. oscillator coil—610-1,250 K.C. |
| 38772 | Coil—P.B. oscillator coil—750-1,420 K.C. |
| 38773 | Coil—P.B. oscillator coil—950-1,560 K.C. |
| 38689 | Condenser—Variable tuning condenser |
| 38410 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 54-in. overall length) |
| 38694 | Core—Adjustable core and stud for antenna and oscillator coils |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 36237 | Drum—Drive drum |
| 37068 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 38770 | Loop—Antenna loop |
| 38768 | Plate—Dial back plate complete with pulleys—less dial |
| 36230 | Pulley—Drive cord pulley |
| 30189 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 34767 | Resistor—2,200 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 38785 | Resistor—15 meg., ½ watt |
| 36897 | Shaft—Tuning knob shaft |
| 34449 | Socket—Dial lamp socket |
| 37605 | Socket—Tube socket—moulded type |
| 31251 | Socket—Tube socket—wafer type |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for core and stud |
| 38688 | Switch—Range switch |
| 38771 | Switch—Selector switch |
| 36232 | Transformer—First I.F. transformer |
| 36233 | Transformer—Second I.F. transformer |
| 36800 | Transformer—Output transformer (for RL-81-B2) |
| 38994 | Transformer—Output transformer (for RL-86-B1) |
| 33726 | Washer—"C" washer for tuning shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39067 | Back—Cabinet back |
| 38375 | Button—Push button |
| 36873 | Clamp—Dial clamp |
| 38814 | Decalcomania—Control panel decal |
| 38840 | Dial—Glass dial scale |
| 38376 | Escutcheon—Push button escutcheon |
| 37831 | Fastener—Push-on fastener for back |
| 36886 | Knob—Range switch knob |
| 36722 | Knob—Control knob (volume or tuning) |
| 34317 | Marker—Station selector marker |
| 30900 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push buttons |




CONNECTIONS FOR PERMANENT-MAGNET SPEAKER




CONNECTIONS FOR ELECTRO-MAGNET SPEAKER

## MODELS 26X1, -3, -4.

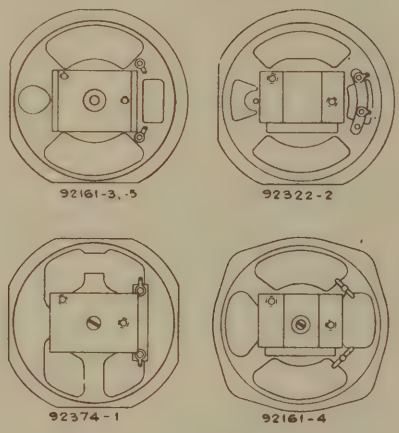
## SUBSTITUTE SPEAKERS

In 1st production of the following models, the speaker is RL-81-B2. In later production, several substitute speakers are used, as listed below.

WHEN ORDERING REPLACEMENT PARTS FOR SPEAKERS, NOTE THE IDENTIFICATION NUMBER STAMPED ON THE SPEAKER FRAME. IF THE NUMBER STAMPED ON THE SPEAKER DOES NOT APPEAR IN THE FOLLOWING LIST, ORDER THE REQUIRED PART BY DESCRIPTION, AND SPECIFY THE IDENTIFYING NUMBER STAMPED ON THE SPEAKER AND THE RECEIVER MODEL NUMBER.

Alternate "EM" and "PM" speaker connections are shown in the accompanying diagrams.

| NUMBER STAMPED ON SPEAKER | CONE AND VOICE COIL STOCK No. | FIELD COIL STOCK No. |
|---|---|---|
| RL-86-A3 | 35570 | 39543 |
| RL-86-B1 | 39447 | 39448 |
| RL-86-B4 | 39447 | 39448 |
| 92161-3 | 38352 | PM |
| 92161-4 | 39535 | PM |
| 92161-5 | 38352 | PM |
| 92322-2 | 39536 | PM |
| 92374-1 | 39537 | PM |




*Identifying Sketches of Five "PM" Speakers.*

# RADIOLA 515

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES MODEL 515A RC1014A** |
| | Same as 26 x 3 RC1014A |
| | **EXCEPT** |
| 35998 | Capacitor - 3-30 mmf (C23) |
| 13141 | Capacitor - 47 mmf (C4) |
| 38694 | Core - Adjustable core and stud for oscillator coil. |
| | **DELETE** |
| 39237 | Capacitor - 2-20 mmfd (C23) |
| 6134 | Resistor - 1200 ohms (R12) |
| 36800 | Transformer - Output transformer. |

| STOCK No. | DESCRIPTION |
|---|---|
| | **"EM" SPEAKER ASSEMBLIES (RL-86-B1)** |
| 32907 | Cap—Dust cap |
| 39448 | Coil—Field coil, 350 ohms |
| 39447 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 39693 | Back - Cabinet back. |
| 36873 | Clamp - Dial clamp. |
| 38874 | Decalcamania - Control panel decal. |
| 39045 | Dial - Glass dial scale. |
| 37831 | Fastener - Push-on fastener for back. |
| 36541 | Knob - Volume or tuning knob. |
| 37386 | Knob - Range switch knob. |
| 11349 | Spring - Retaining spring for knobs. |

# MODEL 27K

## Chassis No. RC-567

## Seven-Tube, Two-Band, AC, Superheterodyne Receiver

### Electrical Specifications

**Frequency Ranges**

| | |
|---|---|
| Standard Broadcast | 540-1,600 kc |
| Short Wave | 9.4-15.4 mc |

**Intermediate Frequency** ..... 455 kc

**Push-Button Ranges**

| | |
|---|---|
| One station between approximately | 540-1,030 kc |
| One station between approximately | 610-1,250 kc |
| Two stations between approximately | 740-1,430 kc |
| One station between approximately | 880-1,600 kc |

**Tube Complement**

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Detector, A.V.C. |
| (5) RCA-6SQ7 | A-F Amplifier |
| (6) RCA-6K6GT | Power Output |
| (7) RCA-5Y3-G | Rectifier |

**Pilot Lamps (2)** ..... Mazda No. 51, 6.3 volts, 0.20 amp.

**Power Output Rating**

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

**Loudspeaker (RL-70-L5)**

| | |
|---|---|
| Type | 12-inch Electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

**Power Supply Ratings**

105-125 volts, 50-60 cycles, 90 watts
105-125 volts, 25-60 cycles, 90 watts
Universal, 40-60 cycles, 90 watts

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 38 | 26½ | 12 |
| Chassis Base Dimensions (inches) | 2½ | 18 | 6¾ |
| Overall Chassis Height | | | 7¼ |

Tuning Drive Ratio ..... 10-1
Weight ..... (Net, 41 lbs.) (Shipping, 55 lbs.)

### Push Button Adjustment

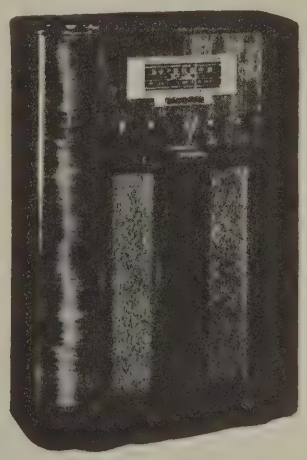
The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

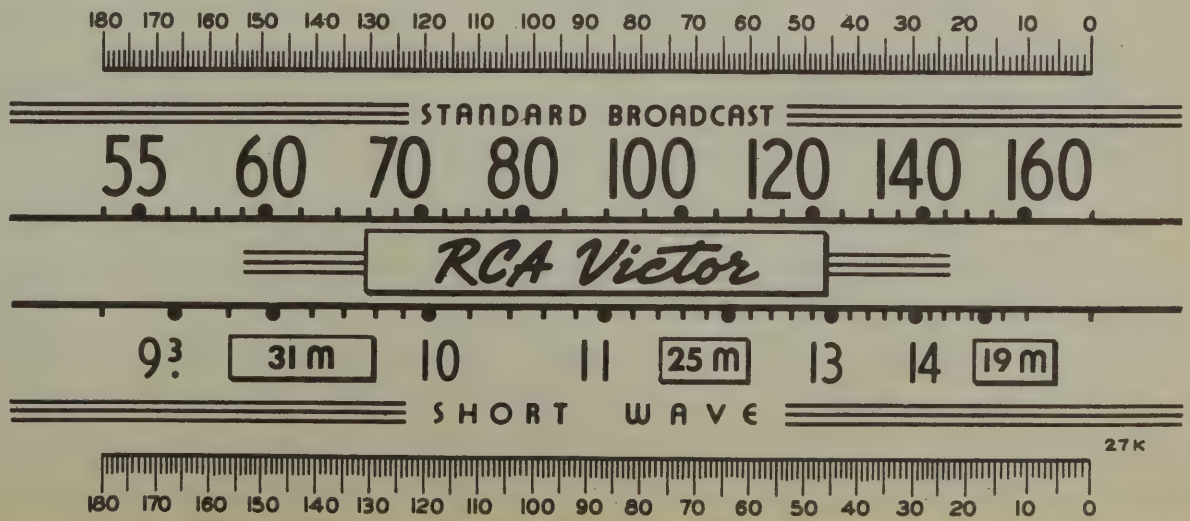
In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-15) to receive the station.
4. After oscillator core is set correctly, adjust C-37 for maximum output.

   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On the 880 to 1,600 kc push-button, the higher frequency stations may be received with L-11 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.





# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by plastic cement which must be tight when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.** — Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

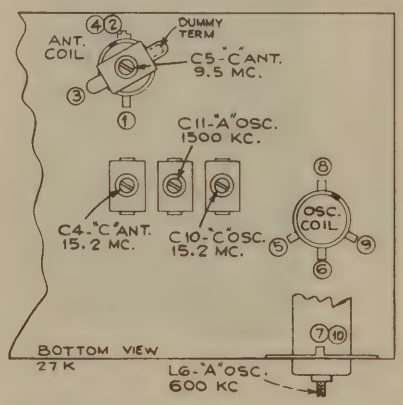
**Dial-Indicator Adjustment.** — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

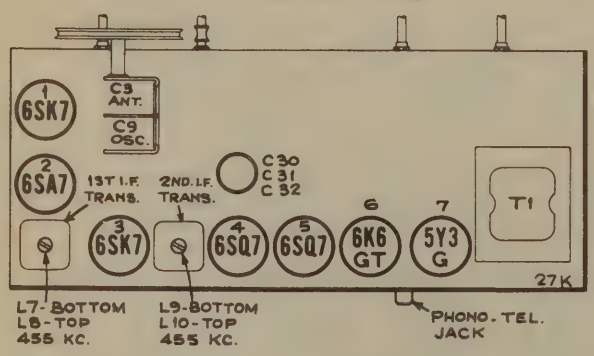
| Steps | Connect high side of test oscillator to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with 0.01 mfd. | 455 kc | "A" Band Quiet Point between 550 and 750 kc | L-9 and L-10 (2nd I-F Trans.) |
| 2 | 6SA7 grid in series with 0.01 mfd. | | | L-7 and L-8 (1st I-F Trans.) |
| 3 | Yellow loop lead in series with 200 mmf. | 1,500 kc | "A" Band 1,500 kc (20°) | C-11 (osc.) |
| 4 | | 600 kc | "A" Band 600 kc (149.5°) | L-6 (osc.) |
| 5 | Antenna terminal in series with 47 mmf. (link open) | 15.2 mc | "C" Band 15.2 mc (13.5°) | C-10 (osc.)* C-4 (ant.) |
| 6 | | 9.5 mc | "C" Band 9.5 mc (148°) | C-5 (ant.) (Rock gang) |
| 7 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 1,500 kc | "A" Band 1,500 kc | C-1 (on loop) |
| 8 | | 600 kc | 600 kc | L-6 (osc.) (Rock gang) |
| 9 | | Repeat steps 7 and 8. | | |

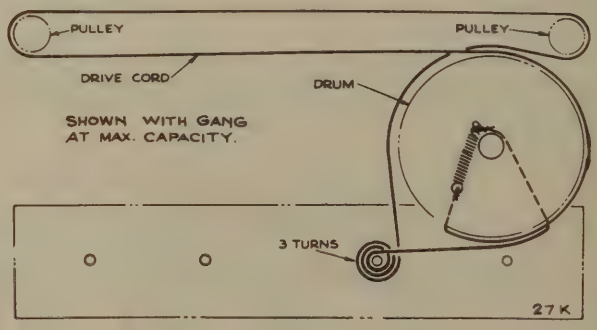
*Use minimum capacity peak if two can be obtained.

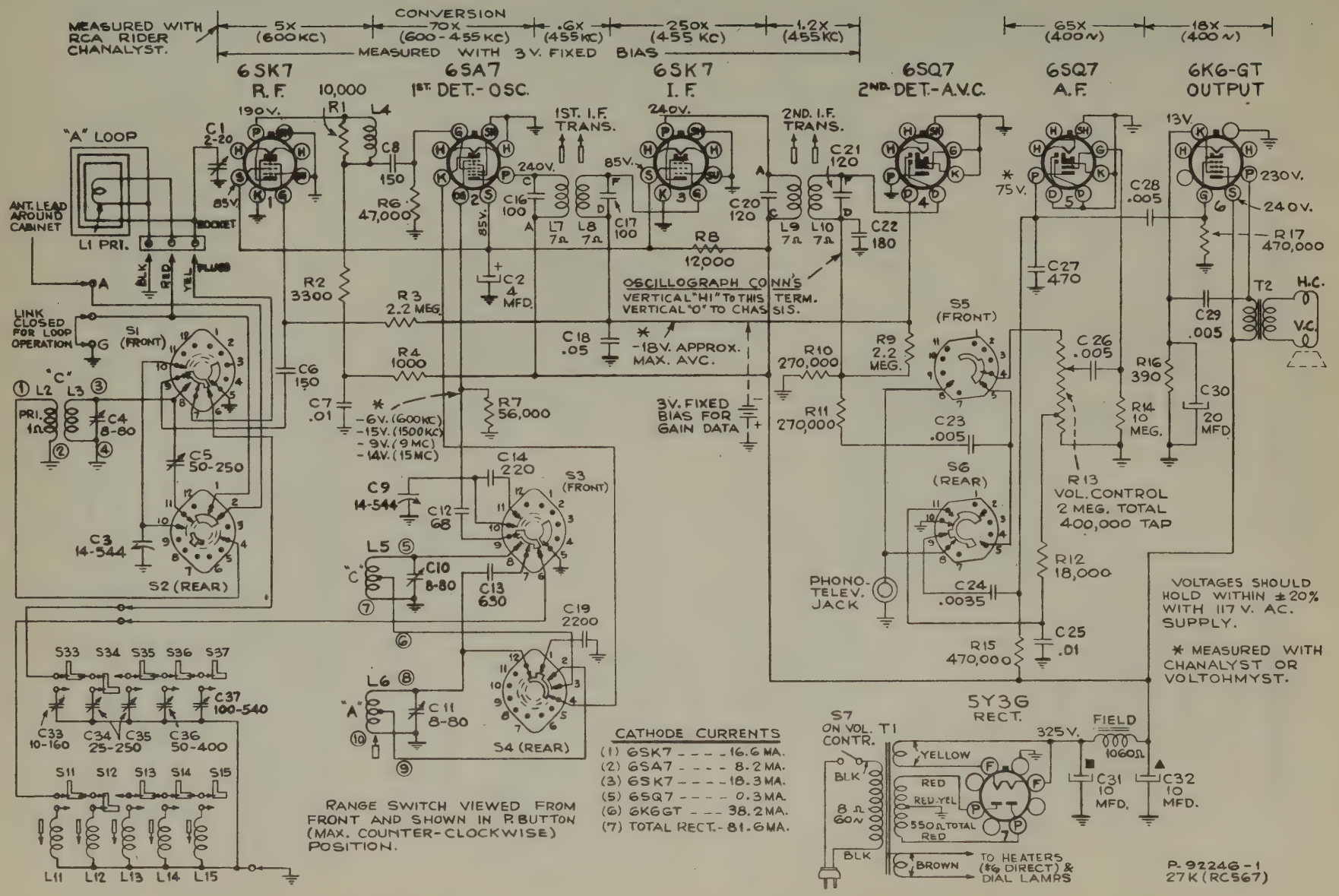
Note.—Oscillator tracks 455 kc above signal on all bands.

**External Antenna.**—For best reception on "C" band with an external antenna, peak the trimmer on "C" antenna coil for maximum output on a station in the 31-meter band.






MEASURED WITH RCA RIDER CHANALYST.
CONVERSION
5X (600KC)
70X (600-455 KC)
.6X (455KC)
250X (455 KC)
1.2X (455KC)
MEASURED WITH 3V. FIXED BIAS
65X (400~)
18X (400~)
6SK7 R.F.
6SA7 1ST DET.-OSC.
6SK7 I.F.
6SQ7 2ND DET.-A.V.C.
6SQ7 A.F.
6K6-GT OUTPUT
"A" LOOP
ANT. LEAD AROUND CABINET
L1 PRI.
SOCKET
PLUGS
BLK
RED
YEL
LINK CLOSED FOR LOOP OPERATION
S1 (FRONT)
S2 (REAR)
S3 (FRONT)
S4 (REAR)
S5 (FRONT)
S6 (REAR)
S7 ON VOL. CONTR.
1ST. I.F. TRANS.
2ND. I.F. TRANS.
OSCILLOGRAPH CONN'S
VERTICAL "HI" TO THIS TERM.
VERTICAL "O" TO CHASSIS.
-18V. APPROX. MAX. AVC.
3V. FIXED BIAS FOR GAIN DATA
-6V. (600KC)
-15V. (1500KC)
-9V. (9 MC)
-14V. (15MC)
R13 VOL. CONTROL 2 MEG. TOTAL 400,000 TAP
PHONO-TELEV. JACK
5Y3G RECT.
325V.
FIELD
1060Ω
TO HEATERS (6 DIRECT) & DIAL LAMPS
YELLOW
RED
RED-YEL
550Ω TOTAL
BROWN
8Ω 60~
P-9224G-1
27K (RC567)
CATHODE CURRENTS
(1) 6SK7 - - - - 16.6 MA.
(2) 6SA7 - - - - 8.2 MA.
(3) 6SK7 - - - - 18.3 MA.
(5) 6SQ7 - - - - 0.3 MA.
(6) 6K6GT - - - 38.2 MA.
(7) TOTAL RECT. - 81.6 MA.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN P. BUTTON (MAX. COUNTER-CLOCKWISE) POSITION.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-567)** |
| 35966 | Board—"Antenna-Ground" board |
| 32145 | Capacitor—Electrolytic—4 mfd., 450 volts |
| 38571 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 400 volts and 1 section of 20 mfd., 25 volts |
| 35791 | Capacitor—Mica trimmer comprising 3 sections of 8-80 mmfd. |
| 38368 | Capacitor—Mica trimmer—50-350 mmfd. for "C" band antenna coil |
| 13057 | Capacitor—68 mmfd. |
| 34699 | Capacitor—100 mmfd. |
| 34700 | Capacitor—120 mmfd. |
| 12725 | Capacitor—150 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 38858 | Capacitor—220 mmfd. |
| 30433 | Capacitor—470 mmfd. |
| 38831 | Capacitor—630 mmfd. |
| 44338 | Capacitor—2,200 mmfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 38788 | Coil—Antenna coil—"C" band |
| 38829 | Coil—Coil and resistor—10,000 ohms |
| 38787 | Coil—Oscillator coil |
| 38786 | Condenser—Variable tuning condenser |
| 38404 | Control—Volume control and power switch |
| 34662 | Cord—Pointer cord (approx. 54 in. overall lgth.) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 38359 | Cup—Oscillator coil mounting cup |
| 36397 | Dial—Drive drum calibrator |
| 38790 | Drum—Drive drum—less calibrator |
| 5119 | Plug—3-contact female plug for speaker cable |
| 32641 | Plug—3-prong male plug for selector switch cable |
| 38832 | Plug—Pin plug for antenna loop leads |
| 31373 | Pulley—Drive cord pulley |
| 38857 | Resistor—390 ohms, 2 watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 12312 | Resistor—3,300 ohms, ½ watt |
| 35875 | Resistor—12,000 ohms, 3 watt |
| 3219 | Resistor—18,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30787 | Resistor—47,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 38589 | Shaft—Tuning knob shaft |
| 35772 | Shield—Bottom shield for power transformer, No. 35959 |
| 35709 | Shield—Top shield for power transformer, No. 35959 |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Cord spring |
| 12007 | Spring—Retaining spring of oscillator coil adjustable core and stud |
| 38789 | Support—Drive cord pulley support complete with pulley |
| 38792 | Switch—Range switch |
| 38791 | Switch—Tone control switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer—105-120 volts, 25 cycle |
| 35959 | Transformer—Power transformer—105-120 volts, 50-60 cycle, less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-70L-5)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil—1,060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 31301 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38375 | Button—Push button |
| 38684 | Capacitor—Mica trimmer—2-20 mmfd. |
| 35869 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 38584 | Channel—Rubber channel for dial scale |
| 38579 | Coil—Loop primary coil |
| 38315 | Coil—P.B. oscillator coil—high frequency |
| 37638 | Coil—P.B. oscillator coil—low frequency |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 38798 | Decalcomania—Control panel decal |
| 38794 | Dial—Glass dial scale |
| 38793 | Escutcheon—Dial scale and push button escutcheon—less dial and buttons |
| 38795 | Indicator—Station selector indicator |
| 35814 | Knob—Control knobs |
| 11891 | Lamp—Dial lamp |
| 38578 | Loop—Antenna loop complete |
| 34317 | Marker—Station selector markers |
| 33774 | Mounting—Speaker mounting hardware |
| 38580 | Pivot—Loop support and pivot—on top of loop frame |
| 36422 | Socket—Loop cable or switch cable socket |
| 30900 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push button |
| 38581 | Support—Loop bracket and support—on bottom of loop frame |
| 38797 | Switch—Selector switch |

# MODEL 28T

## Chassis No. RC-569

## Eight-Tube, Three-Band, A-C, Superheterodyne Receiver

### Electrical and Mechanical Specifications

**Frequency Ranges**

| | |
|---|---|
| "A" Standard Broadcast | 540-1600 kc |
| "B" Medium Wave | 2,300-6,300 kc |
| "C" Short Wave | 9,400-15,400 kc |

**Intermediate Frequency** ..... 455 kc

**Push-Button Ranges**

| | |
|---|---|
| One station between approximately | 540-1,030 kc. |
| Two stations between approximately | 610-1,250 kc. |
| Two stations between approximately | 740-1,430 kc. |
| One station between approximately | 880-1,600 kc. |

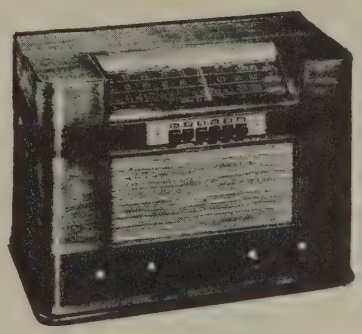
**Tube Complement**

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Det.-Osc. |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd-Det. A.V.C.-A.F.-Amp. |
| (5) RCA-6SQ7 | Phase Inverter |
| (6) RCA-6K6GT | Power Output |
| (7) RCA-6K6GT | Power Output |
| (8) RCA-5Y3G | Rectifier |

**Dial Lamp (2)** .Mazda No. 51 6-8 volt 0.2 amps.

**Power Supply Ratings**

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 90 watts |
| 105-125 volts, 25-60 cycles | 90 watts |



**Power Output Rating**

| | |
|---|---|
| Undistorted | 4.5 watts |
| Maximum | 5.5 watts |

**Loudspeaker (92196-3)**

Type.....9x6 inches elliptical, electrodynamic
V.C. Impedance ..... 4.4 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet (inches) | 12¾ | 18 | 10 |
| Chassis Base (inches) | 2½ | 16 | 6¾ |
| Chassis Height (inches) | | | 10¾ |

Weight..... 27-lbs. (shipping) 23-lbs. net
Tuning Drive Ratio..... 15 to 1

### Push Button Adjustment

Six station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

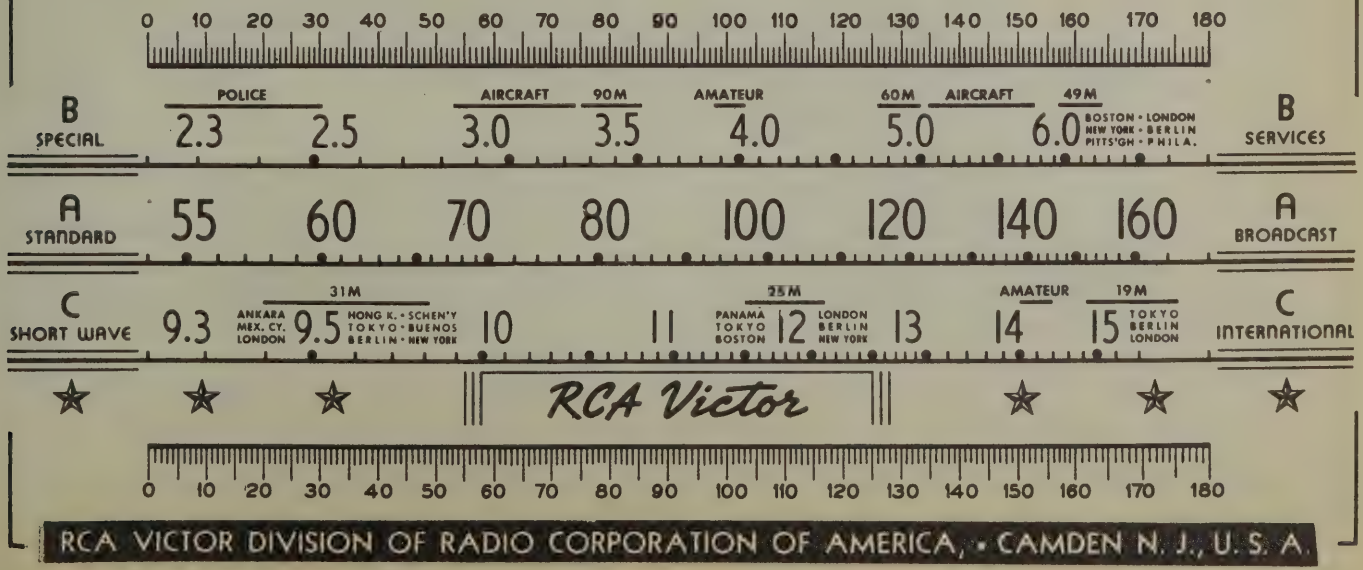
1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station. It may be necessary to maintain

approximate tracking between antenna and oscillator to receive weak stations.

4. After oscillator core is adjusted properly, adjust trimmer No. 1 for maximum output.

   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**

5. Adjust for each of the five remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.



# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration for Alignment.**—The dial calibration for alignment purposes can be set up in two ways:

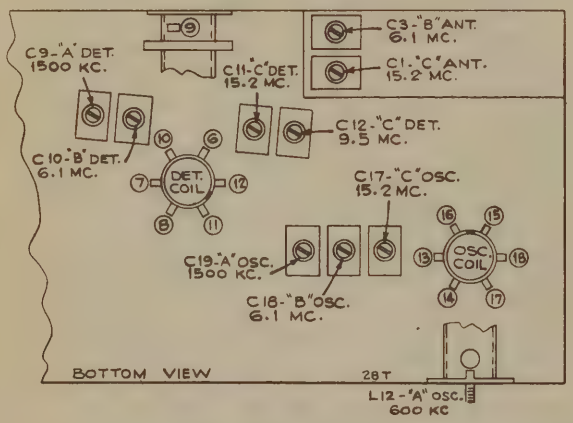
1. The dial may be very easily removed from the cabinet. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial placed on the frame so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

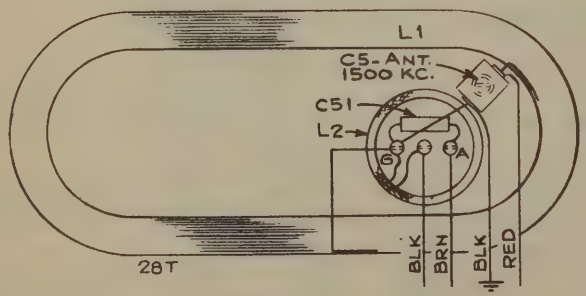
**Pointer for Calibration Scale.**—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.

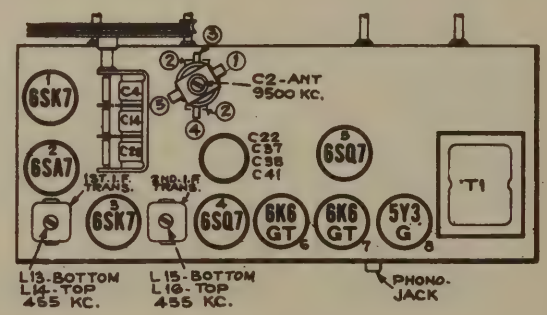
**External Antenna.**—For best reception on "C" band with an outside antenna, adjust C2 for peak output on a station in the 31-meter band.

| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adj. the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F Grid in series with .01 mfd. | 455 kc | "A" Band Quiet Point between 550-750 kc | L-15 and L-16 2nd I-F Trans. |
| 2 | Det. Grid in series with .01 mfd. | | | L-13 and L-14 1st I-F Trans. |
| 3 | Ant. terminal in series with 200 mmfd. (link open) | 1,500 kc | 1500 kc (160°) "A" Band | C-19 (osc.) C-9 (Det.) C-5 (on loop) |
| 4 | | 600 kc | 600 kc (30.5°) | L-12 Rock Gang |
| 5 | | Repeat (3) and (4) | | |
| 6 | Ant. terminal in series with 22 mmfd. (link open) | 6,100 kc | 6,100 kc (161°) "B" Band | C-18 (osc.)* C-10 (Det.) Rock Gang C-3 (ant.) |
| 7 | | 15,200 kc | 15,200 kc (167°) "C" Band | C-17 (osc.)* C-11 (Det.) Rock Gang C-1 (ant.) |
| 8 | | 9,500 kc | 9,500 kc (28.6°) | C-2 (ant.) C-12 (Det.) Rock Gang |
| 9 | | Repeat (7) and (8) | | |

*Use minimum capacity peak if two peaks can be obtained.
Note—Oscillator tracks 455 kc above signal on all bands.



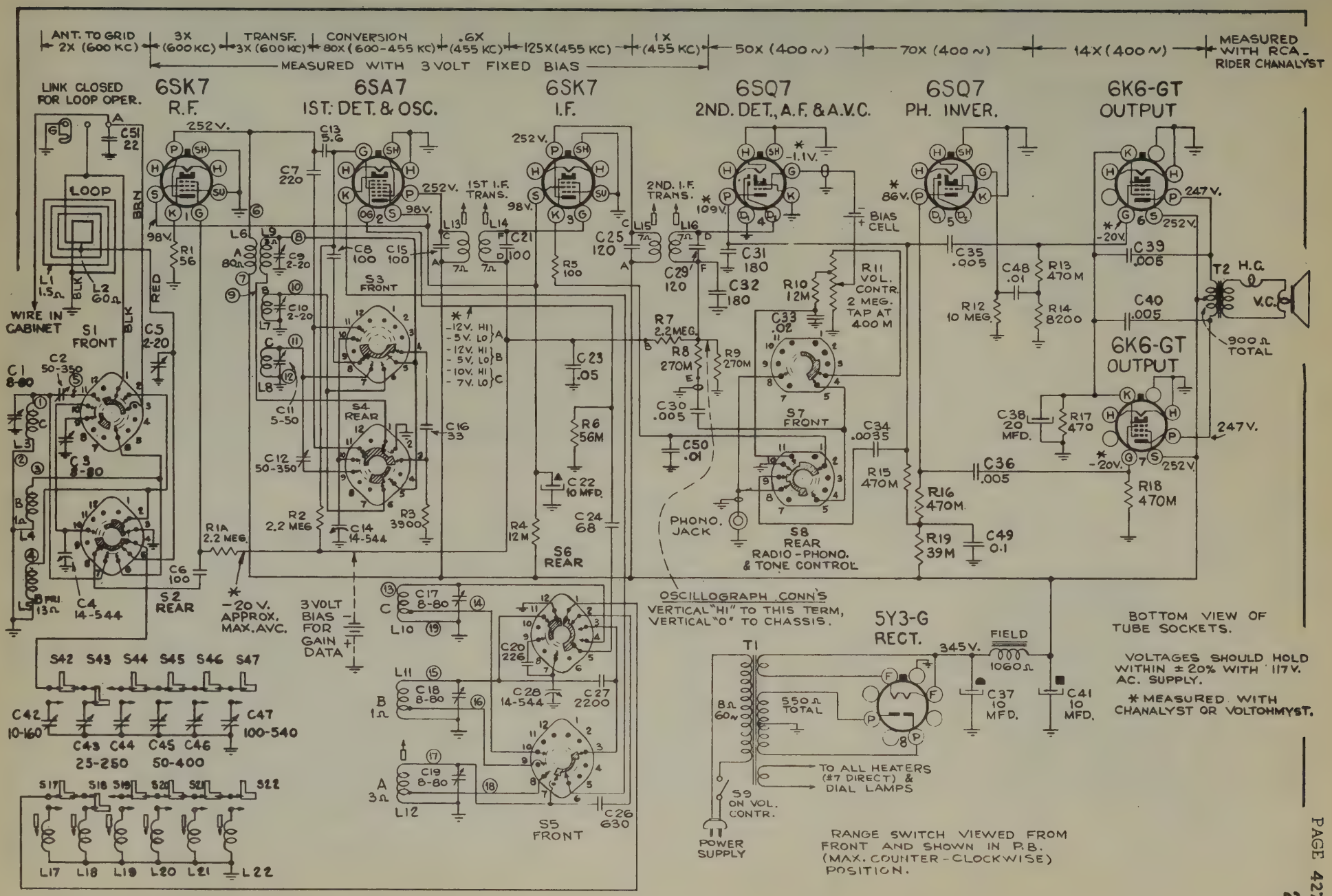



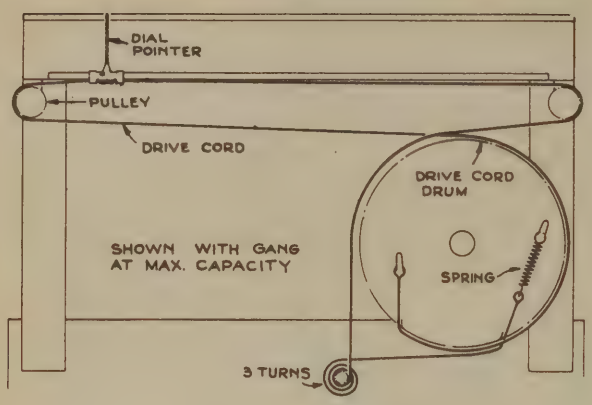

**Precautionary Lead Dress.—**

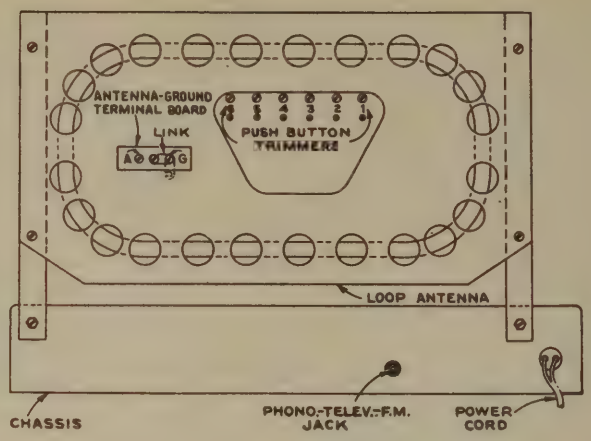
1. Dress shielded lead from diode filter to tone control switch away from grid of the 6SQ7 a-f amplifier.
2. Dress shielded lead from grid of 6SQ7 a-f amplifier away from diode output system.
3. Power leads to rear of volume control should be dressed towards side apron.
4. Plate leads on output tubes should be dressed towards chassis.

## CATHODE CURRENTS

| | | |
|---|---|---|
| (1) | 6SK7 | 15.5 |
| (2) | 6SA7 | 8.9 |
| (3) | 6SK7 | 14.3 |
| (4) | 6SQ7 | .31 |
| (5) | 6SQ7 | .36 |
| (6) | 6K6GT | 21.4 |
| (7) | 6K6GT | 21.4 |
| (8) | TOTAL RECT. | 82.2 |


ANT. TO GRID 2X (600 KC)
3X (600 KC)
TRANSF. 3X (600 KC)
CONVERSION 80X (600-455 KC)
.6X (455 KC)
125X (455 KC)
1X (455 KC)
50X (400 ~)
70X (400 ~)
14X (400 ~)
MEASURED WITH RCA-RIDER CHANALYST
MEASURED WITH 3 VOLT FIXED BIAS
LINK CLOSED FOR LOOP OPER.
6SK7 R.F.
6SA7 1ST. DET. & OSC.
6SK7 I.F.
6SQ7 2ND. DET., A.F. & A.V.C.
6SQ7 PH. INVER.
6K6-GT OUTPUT
6K6-GT OUTPUT
LOOP
WIRE IN CABINET
S1 FRONT
S2 REAR
S3 FRONT
S4 REAR
S5 FRONT
S6 REAR
S7 FRONT
S8 REAR RADIO-PHONO. & TONE CONTROL
1ST I.F. TRANS.
2ND. I.F. TRANS.
BIAS CELL
R11 VOL. CONTR. 2 MEG. TAP AT 400 M
PHONO. JACK
-20 V. APPROX. MAX. AVC.
3 VOLT BIAS FOR GAIN DATA
OSCILLOGRAPH CONN'S VERTICAL "HI" TO THIS TERM, VERTICAL "O" TO CHASSIS.
5Y3-G RECT.
T1
T2
H.C.
V.C.
900 Ω TOTAL
FIELD 1060 Ω
345 V.
550 Ω TOTAL
8 Ω 60 W
TO ALL HEATERS (#7 DIRECT) & DIAL LAMPS
S9 ON VOL. CONTR.
POWER SUPPLY
BOTTOM VIEW OF TUBE SOCKETS.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN P.B. (MAX. COUNTER-CLOCKWISE) POSITION.
S42 S43 S44 S45 S46 S47
C42 10-160
C43 C44 C45 C46 25-250 50-400
C47 100-540
S17 S18 S19 S20 S21 S22
L17 L18 L19 L20 L21 L22




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-569)** |
| 34025 | Board—"Antenna-Ground" board |
| 33014 | Capacitor—Electrolytic, comprising 3 sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts |
| 38368 | Capacitor—Adjustable trimmer (50-350 mmfd.) for antenna coil |
| 38357 | Capacitor—Mica trimmer—2-20 mmfd. |
| 38363 | Capacitor—Mica trimmer comprising 2 sections of 8-80 mmfd. |
| 35791 | Capacitor—Mica trimmer comprising 3 sections of 8-80 mmfd. |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 38360 | Capacitor—Mica trimmer comprising 1 section of 50-350 mmfd., 1 section of 5-50 mmfd., and 2 sections of 2-20 mmfd. |
| 12814 | Capacitor—5.6 mmfd. |
| 14021 | Capacitor—22 mmfd. |
| 12948 | Capacitor—33 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 38830 | Capacitor—226 mmfd. |
| 38831 | Capacitor—630 mmfd. |
| 30882 | Capacitor—2,200 mmfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 31581 | Cell—Bias cell |
| 38367 | Coil—Antenna coil |
| 36031 | Coil—Loop primary coil |
| 38358 | Coil—Oscillator coil |
| 38315 | Coil—Push button oscillator coil—high frequency |
| 37638 | Coil—Push button oscillator coil—low frequency |
| 38366 | Coil—R.F. coil |
| 38364 | Condenser—3-gang variable tuning condenser |
| 38404 | Control—Volume control and power switch |
| 34662 | Cord—Pointer cord (approx. 60-in. overall length) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 35871 | Core—Adjustable core and stud for push button oscillator coils |
| 38359 | Cup—Coil mounting cup and bushing |
| 38361 | Drum—Condenser drive drum |
| 38365 | Frame—Dial frame complete—less dial |
| 31580 | Holder—Bias cell holder |

| STOCK No. | DESCRIPTION |
|---|---|
| 35798 | Indicator—Station selector indicator |
| 38356 | Loop—Antenna loop complete—less supports |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31373 | Pulley—Drive cord pulley |
| 13220 | Resistor—56 ohms, ½ watt |
| 34765 | Resistor—100 ohms, ½ watt |
| 35885 | Resistor—470 ohms, 2 watt |
| 30694 | Resistor—3,900 ohms, ½ watt |
| 14075 | Resistor—8,200 ohms, ½ watt |
| 30436 | Resistor—12,000 ohms, ½ watt |
| 35875 | Resistor—12,000 ohms, 3 watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 35797 | Shaft—Tuning knob shaft |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Pointer cord spring |
| 12007 | Spring—Retaining spring for oscillator coil core and stud |
| 38362 | Switch—Range switch |
| 38384 | Switch—Selector switch |
| 38369 | Switch—Tone switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer—105-120 volts, 25 cycle |
| 35959 | Transformer—Power transformer—105-120 volts, 50-60 cycle—less shields |
| 35969 | Washer—"C" washer for tuning knob shaft |
| | **SPEAKER ASSEMBLIES (92196-3)** |
| 38817 | Coil—Field coil—1,060 ohms |
| 38373 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male speaker plug |
| 38374 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38376 | Bezel—Push button bezel |
| 38375 | Button—Push button |
| 37334 | Clip—Dial clip |
| 38378 | Decalcomania—Control panel decal—Pkg. 5 |
| 38377 | Dial—Glass dial scale |
| 35814 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 34317 | Marker—Station selector marker |
| 33774 | Mounting—Speaker mounting hardware |
| 30900 | Spring—Retaining spring for control knobs |
| 34053 | Spring—Retaining spring for push button |

# MODEL 28X and 28X5

**Chassis No. RC-1002 RC-1002-A**

## Eight-Tube, Two-Band, AC-DC Superheterodyne Receiver

MODEL 28X

MODEL 28X5

## Electrical and Mechanical Specification

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 535-1,720 kc |
| Short Wave | 8.7-15.6 mc |
| Intermediate Frequency | 455 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SG7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Det.-Osc. |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Det., A.V.C., A.F. Amp. |
| (5) RCA-6SQ7 | Phase Inverter |
| (6) RCA-25L6GT | Power Output |
| (7) RCA-25L6GT | Power Output |
| (8) RCA-25Z6GT | Rectifier |

Dial Lamp (2) ..... Mazda 44, 6.3 V., 0.25 A.

| LOUDSPEAKER | 92136-2 | or | 92136-3 |
|---|---|---|---|
| Type | PM | | EM |
| Size | 9½-inch "Ellipticon" | | 9½-inch "Ellipticon" |
| Voice Coil Impedance at 400 cycles | 4 ohms | | 3 ohms |

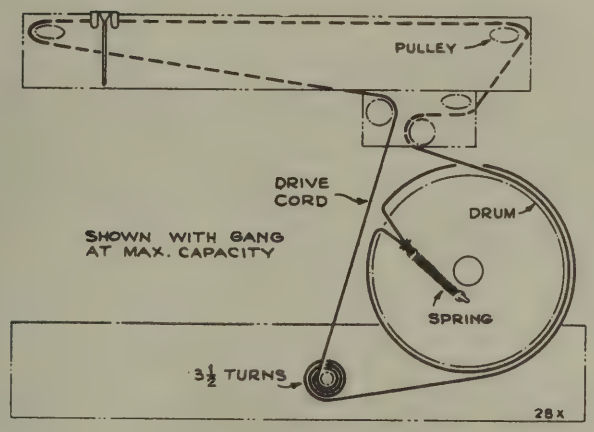
POWER OUTPUT RATING

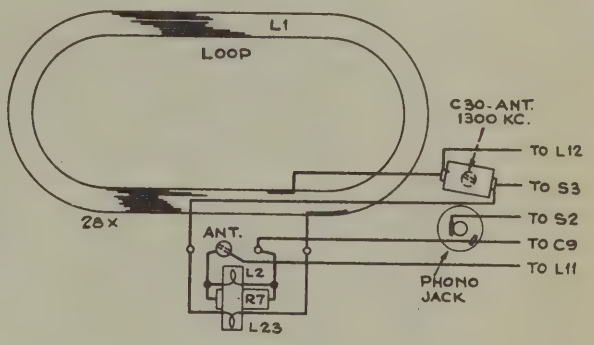
| | |
|---|---|
| Undistorted | 2.5 watt |
| Maximum | 4.0 watt |

POWER SUPPLY RATING

105-125 A.C. 50-60 cy. or D.C. ..... 45 watts

**Thermal relay cuts in the dial lamps after the set warms up.**—This set incorporates a thermal relay to control the dial lamps. When the set is "off," the relay contacts are closed. This shorts out the two lamps. When the set is turned "on," the heater current flows through the relay element R24. This heats up and causes the relay contacts to open, permitting the heater current to flow through the two dial lamps and light them. In normal operation, the lamps light about a half-minute after the set is turned on.




### 28X

**Change in 2nd Production:**

In 1st production, a capacitor C47 is connected from chassis to the junction of R1 and R27 in the RF plate circuit. In 2nd production, C47 is omitted, and terminal 11 on the oscillator coil is connected to the junction of R1 and R27 instead of to the "plus B" bus.

### 28X, 28X-5

**Hum Modulation:**

This form of hum becomes evident when a station's carrier is tuned in, and disappears when the set is tuned between stations. The hum may be present on only a few locals, or on many stations, depending, among other things, on the type and installation of the a-c supply line.

If hum modulation exists, check to see that there is an .05 mfd., 400-volt capacitor connected from the plate of the 25Z6GT rectifier to -B. **Add this capacitor if necessary.** The capacitor acts to by-pass RF signals around the rectifier tube.

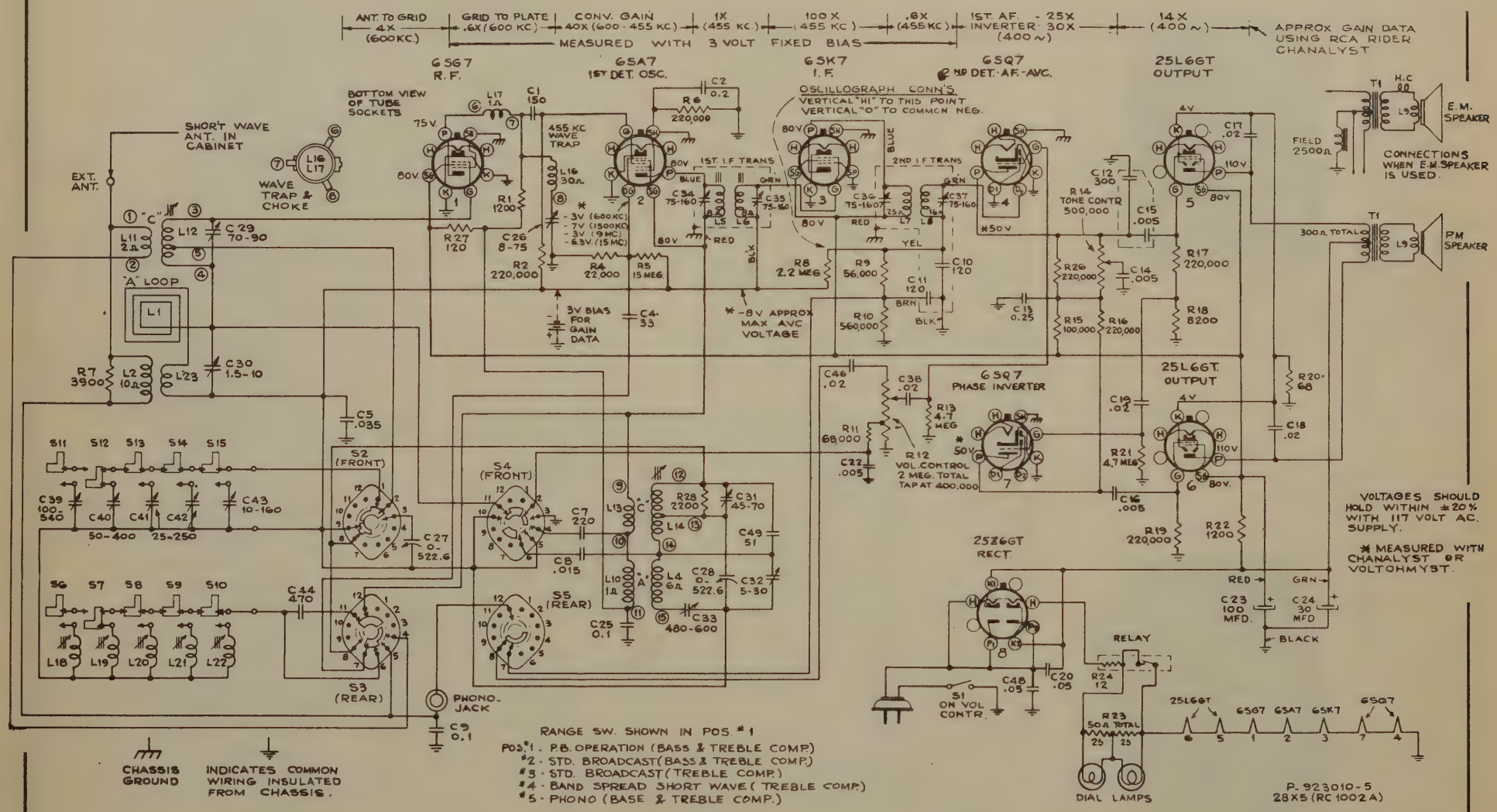
**C4 Changed to 47 mmfd:**

The oscillator grid capacitor is changed from 33 to 47 mmfd., Stock No. 13141.

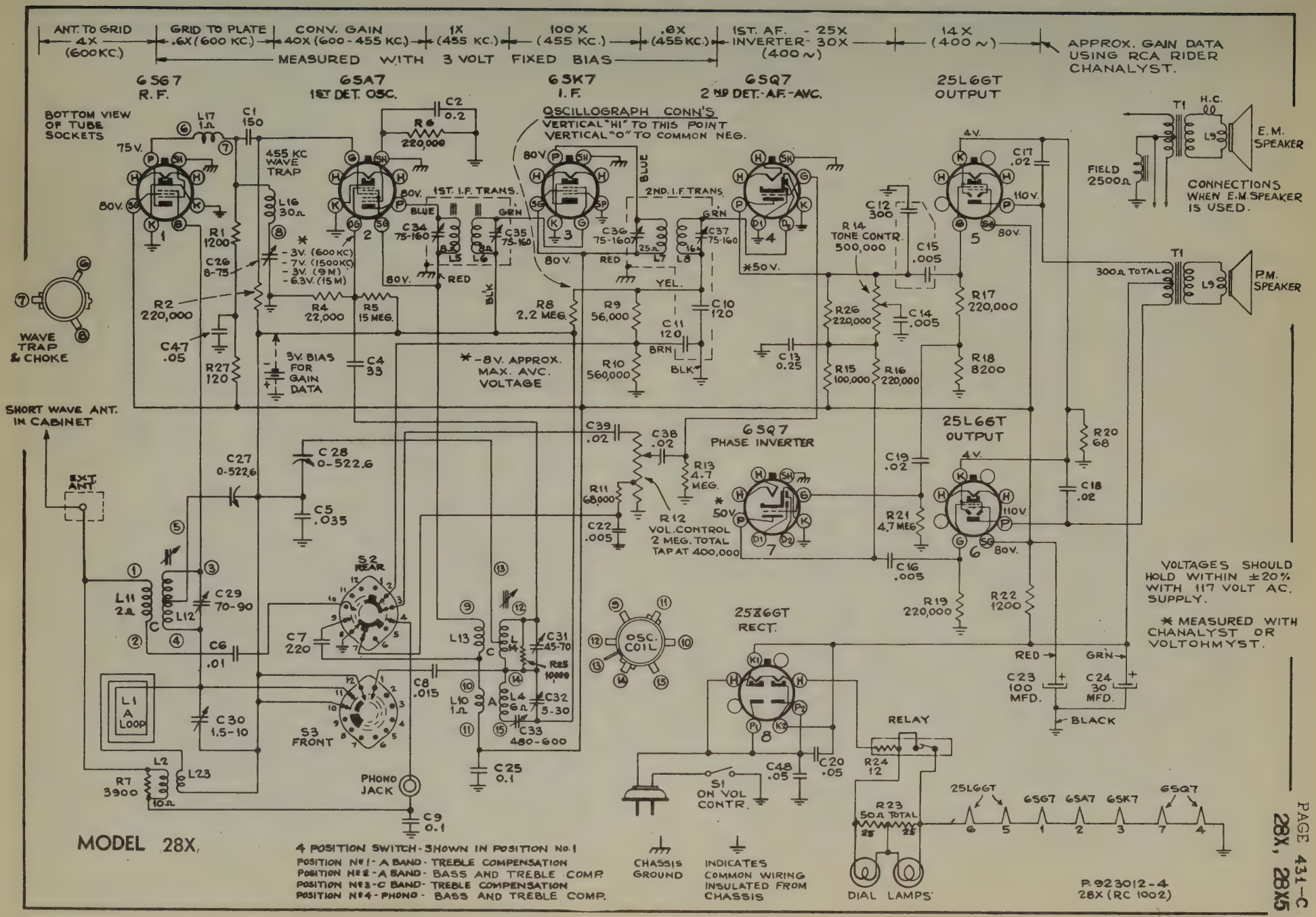
### 28X5

**Insufficient Push-Button Range:**

In Model 28X5 if the push-buttons have insufficient range, realign IF at exactly 455 kc. If this does not correct the trouble, replace the main oscillator coil Stock No. 38685 and realign the set. The correct coil has no number stamping; do not use coil stamped 95106-501.


ANT. TO GRID 4X (600KC.)
GRID TO PLATE .6X (600 KC.)
CONV. GAIN 40X (600 - 455 KC.)
1X (455 KC.)
100 X (455 KC.)
.8X (455 KC.)
1ST. AF. - 25X
INVERTER 30X (400 ~)
14X (400 ~)
APPROX GAIN DATA USING RCA RIDER CHANALYST
MEASURED WITH 3 VOLT FIXED BIAS
6SG7 R.F.
6SA7 1ST DET. OSC.
6SK7 I.F.
6SQ7 2ND DET. AF. AVC.
25L6GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
SHORT WAVE ANT. IN CABINET
EXT. ANT.
WAVE TRAP & CHOKE
"A" LOOP
455 KC WAVE TRAP
OSCILLOGRAPH CONN'S
VERTICAL "HI" TO THIS POINT
VERTICAL "O" TO COMMON NEG.
1ST I.F. TRANS
2ND I.F. TRANS
3V BIAS FOR GAIN DATA
* -8V APPROX MAX AVC VOLTAGE
TONE CONTR 500,000
6SQ7 PHASE INVERTER
VOL. CONTROL 2 MEG. TOTAL. TAP AT 400,000
25Z6GT RECT.
S1 ON VOL CONTR.
RELAY
DIAL LAMPS
PHONO JACK
S2 (FRONT)
S3 (REAR)
S4 (FRONT)
S5 (REAR)
E.M. SPEAKER
FIELD 2500Ω
CONNECTIONS WHEN E.M. SPEAKER IS USED.
P.M. SPEAKER
300Ω TOTAL
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 VOLT AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
RANGE SW. SHOWN IN POS. #1
POS. #1 - P.B. OPERATION (BASS & TREBLE COMP.)
#2 - STD. BROADCAST (BASS & TREBLE COMP.)
#3 - STD. BROADCAST (TREBLE COMP.)
#4 - BAND SPREAD SHORT WAVE (TREBLE COMP.)
#5 - PHONO (BASE & TREBLE COMP.)
CHASSIS GROUND
INDICATES COMMON WIRING INSULATED FROM CHASSIS.
P-923010-5
28X5 (RC 1002A)

# MODEL 28X-5


ANT. TO GRID 4X (600 KC.)
GRID TO PLATE .6X (600 KC.)
CONV. GAIN 40X (600 - 455 KC.)
1X (455 KC.)
100 X (455 KC.)
.8X (455 KC.)
1ST. AF. - 25X
INVERTER - 30X (400 ~)
14 X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST.
MEASURED WITH 3 VOLT FIXED BIAS
6S67 R.F.
6SA7 1ST DET. OSC.
6SK7 I.F.
6SQ7 2ND DET.-A.F.-AVC.
25L6GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
OSCILLOGRAPH CONN'S
VERTICAL "HI" TO THIS POINT
VERTICAL "O" TO COMMON NEG.
455 KC WAVE TRAP
1ST. I.F. TRANS.
2ND. I.F. TRANS.
3V. BIAS FOR GAIN DATA
-8V. APPROX. MAX. AVC. VOLTAGE
6SQ7 PHASE INVERTER
25L6GT OUTPUT
25Z6GT RECT.
OSC. COIL
WAVE TRAP & CHOKE
SHORT WAVE ANT. IN CABINET
EXT ANT.
L1 A LOOP
S1 ON VOL CONTR.
S2 REAR
S3 FRONT
PHONO JACK
R12 VOL. CONTROL 2 MEG. TOTAL TAP AT 400,000
R14 TONE CONTR. 500,000
RELAY
DIAL LAMPS
T1
E.M. SPEAKER
P.M. SPEAKER
FIELD 2500Ω
CONNECTIONS WHEN E.M. SPEAKER IS USED.
300Ω TOTAL
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 VOLT AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
4 POSITION SWITCH - SHOWN IN POSITION No. 1
POSITION No. 1 - A BAND - TREBLE COMPENSATION
POSITION No. 2 - A BAND - BASS AND TREBLE COMP.
POSITION No. 3 - C BAND - TREBLE COMPENSATION
POSITION No. 4 - PHONO - BASS AND TREBLE COMP.
CHASSIS GROUND
INDICATES COMMON WIRING INSULATED FROM CHASSIS
25L6GT 6SG7 6SA7 6SK7 6SQ7
P-923012-4
28X (RC 1002)
MODEL 28X,

# Alignment Procedure

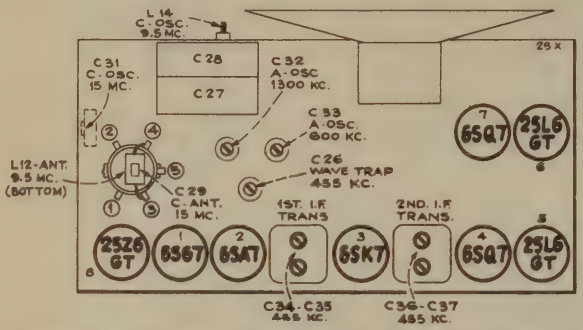
Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Dial Pointer Adjustment.—The dial pointer should be set at the left hand end dial marks, with the gang in full mesh.

Critical Lead Dress

1. Dress all AC filament and power wiring down close to chassis and as far as possible from all audio grid or plate wiring.
2. Dress all leads or parts as far as possible away from oscillator coil.
3. Dress audio coupling capacitor C38 from volume control to grid of 6SQ7 away from filament wire connecting No. 8 pin socket 5 and No. 8 pin socket 7.
4. Dress lead from trimmer condenser on loop to S.W. ant. coil between rectifier and R.F. tube and away from other coil leads.
5. Dress I-F plate and grid leads back into shield can to keep exposed length as short as possible.




Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test osc. to— | Tune test osc. to— | Range Switch to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | A | Quiet Point near middle of dial | C36, C37 2nd I.F. Trans. |
| 2 | Det. grid in series with .01 mfd. | | | | C34, C35 1st I.F. Trans. |
| 3 | Ant. lead in series with 50 mmfd. | 15 mc | C | 15 mc | C-31 (osc.)* C-29 (ant.) |
| 4 | | 9.5 mc | C | 9.5 mc | L14 (osc.) L12 (ant.) |
| | | Repeat steps 3 and 4. | | | |
| 5 | Antenna terminal in series with 200 mmfd. | 1,300 kc | A | 1,300 kc | C-32 (osc.) C-30 (ant.) |
| 6 | | 600 kc | A | 600 kc | C-33 Rock in |
| 7 | | Repeat steps 5 and 6. | | | |
| 8 | R-F grid in series with .01 mfd. | 455 kc | A | low end of dial | C-26** |

*Oscillator should track on high frequency side of signal.

If two peaks are obtained use high frequency (minimum capacity peak).

**Feed a high signal level of 455 kc into R.F. grid and adjust C-26 for minimum signal.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

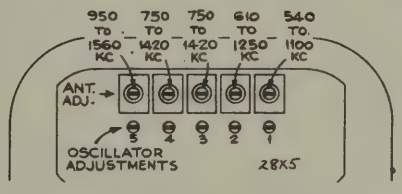
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (Model 28X RC-1002)** |
| 38722 | Board—"Antenna" terminal board |
| 38734 | Bracket—Drive cord pulley bracket |
| 35097 | Can—Shield can for 1st I.F. transformer |
| 39152 | Capacitor—Electrolytic comprising 1 section of 30 mmfd., 150 volts and 1 section of 100 mmfd., 150 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of .0003 mfd. |
| 38691 | Capacitor—Adjustable capacitor—55-75 mmfd. |
| 38692 | Capacitor—Adjustable capacitor—90-110 mmfd. |
| 38693 | Capacitor—Adjustable capacitor comprising 1 section of 8-75 mmfd., 1 section of 480-600 mmfd., and 1 section of 5-30 mmfd. |
| 38723 | Capacitor—Mica trimmer—1.5-10 mmfd. |
| 12948 | Capacitor—33 mmfd. |
| 12725 | Capacitor—150 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 4858 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 38720 | Clip—Spring clip for dial scale |
| 38686 | Coil—Antenna coil |
| 37962 | Coil—Antenna coupling coil |
| 38690 | Coil—Filter coil |
| 38685 | Coil—Oscillator coil |
| 38689 | Condenser—Variable tuning condenser |
| 38409 | Control—Tone control |
| 38404 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 59-in. overall length) |
| 38694 | Core—Adjustable core and stud |
| 38719 | Dial—Glass dial scale |
| 38718 | Drum—Condenser drive drum |
| 38717 | Indicator—Station selector indicator |
| 11891 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 38721 | Loop—Antenna loop complete—less antenna coupling transformer |
| 38729 | Plate—Dial back plate only—less support brackets, pulley bracket and pulleys |
| 36230 | Pulley—Drive cord pulley |
| 38714 | Relay—Thermal relay |
| 38724 | Resistor—Wire wound comprising 2 sections of 50 ohms each |
| 36976 | Resistor—68 ohms, 1 watt |
| 12071 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 14075 | Resistor—8,200 ohms, ½ watt |
| 3078 | Resistor—10,000 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 38785 | Resistor—15 meg., ½ watt |
| 12071 | Resistor—120 ohms, ½ watt |
| 38715 | Shaft—Tuning knob shaft |
| 39087 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 37605 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for core and stud |
| 35098 | Spring—Used to hold I.F. transformers in shield cans |
| 38733 | Support—Left hand dial plate support |
| 38732 | Support—Right hand dial plate support |
| 38727 | Switch—Range switch |
| 38713 | Transformer—Audio transformer |
| 36232 | Transformer—First I.F. transformer—less shield can |
| 37364 | Transformer—Second I.F. transformer—less shield can |
| 33726 | Washer—"C" washer for tuning shaft |
| 38716 | Washer—Spring washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (92136-2)** |
| 38736 | Cone—Cone complete with voice coil |
| | **SPEAKER ASSEMBLIES (92136-3)** |
| 39484 | Coil—Field coil 2,500 ohms |
| 38736 | Cone—Cone complete with voice coil |
| 39483 | Plug—3-prong male plug |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38738 | Decalcomania—Control panel decal—Pkg. 5 |
| 36886 | Knob—Range switch knob |
| 36722 | Knob—Tuning, volume control or tone control knob |
| 30900 | Spring—Retaining spring for knobs |

# Replacement Parts MODEL 28X-5

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (Model 28X5 RC-1002A)** |
| 38722 | Board—"Antenna" terminal board |
| 38734 | Bracket—Drive cord pulley bracket |
| 35097 | Can—Shield can for 1st I.F. transformer |
| 39152 | Capacitor—Electrolytic comprising 1 section of 30 mmfd., 150 volts and 1 section of 100 mmfd., 150 volts |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of .0003 mfd. |
| 38691 | Capacitor—Adjustable capacitor—55-75 mmfd. |
| 38692 | Capacitor—Adjustable capacitor—90-110 mmfd. |
| 38693 | Capacitor—Adjustable capacitor comprising 1 section of 8-75 mmfd., 1 section of 480-600 mmfd., and 1 section of 5-30 mmfd. |
| 38723 | Capacitor—Mica trimmer—1.5-10 mmfd. |
| 38726 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 1 section of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 12948 | Capacitor—33 mmfd. |
| 39540 | Capacitor—51 mmfd. |
| 12725 | Capacitor—150 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 30433 | Capacitor—470 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 38720 | Clip—Spring clip for dial scale |
| 38813 | Coil—Antenna coil |
| 37962 | Coil—Antenna coupling coil |
| 38690 | Coil—Filter coil |
| 38685 | Coil—Oscillator coil |
| 37638 | Coil—P.B. oscillator coil—540-1,100 K.C. |
| 35803 | Coil—P.B. oscillator coil—610-1,250 K.C. |
| 38772 | Coil—P.B. oscillator coil—750-1,420 K.C. |
| 38773 | Coil—P.B. oscillator coil—950-1,560 K.C. |
| 38689 | Condenser—Variable tuning condenser |
| 38409 | Control—Tone control |
| 38404 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 60-in. overall length) |
| 38694 | Core—Adjustable core and stud |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 38728 | Dial—Glass dial scale |
| 38718 | Drum—Condenser drive drum |
| 38717 | Indicator—Station selector indicator |
| 11891 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 39514 | Loop—Antenna loop complete—less antenna coupling transformer |
| 38729 | Plate—Dial back plate only—less support brackets, pulley bracket and pulleys |
| 36230 | Pulley—Drive cord pulley |
| 38714 | Relay—Thermal relay |
| 38724 | Resistor—Wire wound comprising 2 sections of 50 ohms each |
| 36976 | Resistor—68 ohms, 1 watt |
| 12071 | Resistor—120 ohms, ½ watt |
| 12267 | Resistor—1,200 ohms, ½ watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 34767 | Resistor—2,200 ohms, ½ watt |
| 14075 | Resistor—8,200 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30271 | Resistor—4.7 meg., ½ watt |
| 38785 | Resistor—15 meg., ½ watt |
| 38715 | Shaft—Tuning knob shaft |
| 39087 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 37605 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for core and stud |
| 35098 | Spring—Used to hold I.F. transformers in shield cans |
| 38731 | Support—Left hand dial plate support |
| 38730 | Support—Right hand dial plate support |
| 38712 | Switch—Range switch |
| 38725 | Switch—Selector switch |
| 38713 | Transformer—Audio transformer |
| 36232 | Transformer—First I.F. transformer—less shield can |
| 37364 | Transformer—Second I.F. transformer—less shield can |
| 33726 | Washer—"C" washer for tuning shaft |
| 38716 | Washer—Spring washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (92136-2)** |
| 38736 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38737 | Bezel—Push button bezel |
| 38375 | Button—Push button |
| 38739 | Decalcomania—Control panel decal—Pkg. 5 |
| 36886 | Knob—Range switch knob |
| 36722 | Knob—Tuning, volume control or tone control knob |
| 34317 | Marker—Station selector marker |
| 30900 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push button |

## 28X5 Push Button Adjustment




The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure.

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station. It may be necessary to maintain approximate tracking between antenna and oscillator to receive weak stations.
4. After oscillator core is adjusted properly, adjust antenna trimmer No. 1 for maximum output.

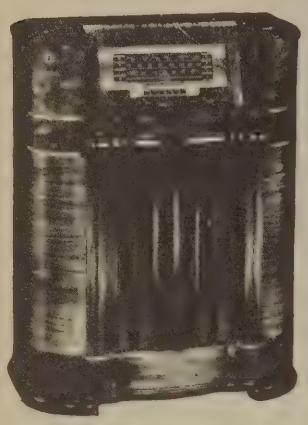
   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the five remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On push-button No. 5, the higher frequency stations may be obtained with the oscillator core No. 5 either in or out. (Oscillator frequency either 455 kc below or above the signal.) The out position should be used so the oscillator is 455 kc above the signal.

# MODELS 29K and 29K2

## Chassis No. RC-570 and RC-570C & D

## Nine-Tube, Three-Band, A-C, Loop, Superheterodyne



*Model 29K*

*Model 29K2*

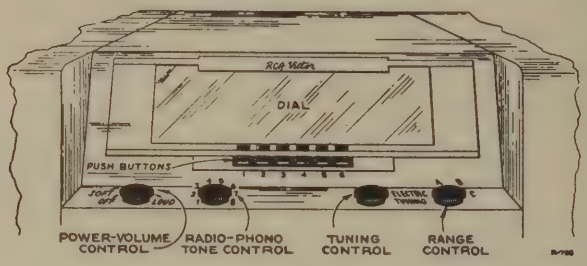
### 29K2 (RC-570-D)

**With 5-inch "EM" Speaker:**

In 2nd production, the 5-inch speaker is changed from "PM" to "EM," as listed below:

SPEAKER ASSEMBLIES
(RL-86B-5)

| Stock No. | Description |
|---|---|
| 39543 | Coil—Field coil—450 ohms |
| 39567 | Cone—Cone complete with voice coil |
| 30870 | Plug—2-prong male plug for speaker |
| 5118 | Plug—3-prong male plug for speaker |




## Electrical and Mechanical Specifications

**Frequency Ranges**

| | |
|---|---|
| Standard Broadcast "A" | 540-1,600 kc |
| Medium Wave "B" | 2.3-6.3 mc |
| Short Wave "C" | 9.4-15.4 mc |
| Intermediate Frequency | 455 kc |

**Tube Complement**

| | |
|---|---|
| (1) RCA-6SG7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Detector, A.V.C. |
| (5) RCA-6SQ7 | A-F Amplifier |
| (6) RCA-6SQ7 | Phase Inverter |
| (7) RCA-6K6GT | Power Output |
| (8) RCA-6K6GT | Power Output |
| (9) RCA-5Y3-G | Rectifier |
| Pilot Lamps (2) | Mazda No. 44, 6-8 volts, .25 amp. |

**Power Output Rating**

| | |
|---|---|
| Undistorted | 5 watts |
| Maximum | 5.5 watts |

**Cabinet Dimensions**

| | |
|---|---|
| Height | 39¾ inches |
| Width | 29 inches |
| Depth | 16 inches |
| Weight (shipping) 29K | 67 pounds |
| Weight (net) 29K | 54 pounds |
| Weight (shipping) 29K2 | 74 pounds |
| Weight (net) 29K2 | 57 pounds |
| Chassis Base Dimensions (inches) | Height 2, Width 16, Depth 7 |
| Overall Chassis Height | 6¾ inches |
| Tuning Drive Ratio | 15 to 1 |

| Loudspeakers | (RL 70J-1) | (RL 81B-6) |
|---|---|---|
| Models | 29K and 29K2 | 29K2 |
| Type | 12-inch electrodynamic | 5-inch Perm. Magnet |
| V.C. Impedance | 2.2 ohms at 400 cycles | 3 ohms at 400 cycles |

**Power Supply Ratings**

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 100 watts |
| Rating B | 105-125 volts, 25-60 cycles, 100 watts |

### Phasing Speakers in 29K2

For correct tone, it is ESSENTIAL that the two speakers operate "in phase," so that the two cones move in and out together.

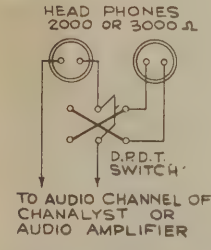
It is necessary to check the phasing whenever a new speaker, cone, field coil, or output transformer is installed, or whenever the speaker connections are altered in any way.

The recommended procedure is as follows:

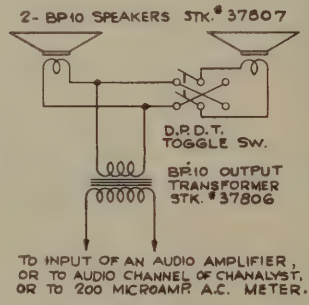
1. Hook up a "phase checker," using headphones or PM speaker units as shown. Connect the checker to an audio amplifier that has an output meter. (The audio channel in the Chanalyst is excellent for this purpose.)

2. Feed a 400-cycle modulated signal into the receiver. Turn volume up to medium. Hold both units of the checker in front of the large speaker in set. Throw the toggle switch to each position and note which position gives maximum output on meter. Mark this position of the switch "in phase." Mark the other position "out of phase."

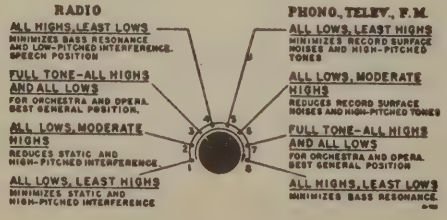
3. Place one unit of the phase checker in front of each speaker in the set. Throw the toggle switch to each position and leave it at the position that gives greatest output on the meter. Note the switch marking for this position. If it says "in phase," the set speakers are correctly phased. If it says "out of phase," reverse the leads to the voice-coil terminals of the small speaker in the receiver.



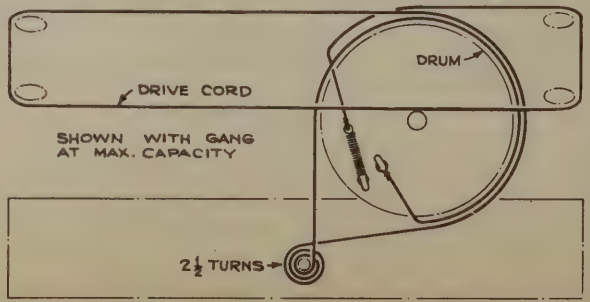

*"Phase Checker," using Headphones.*

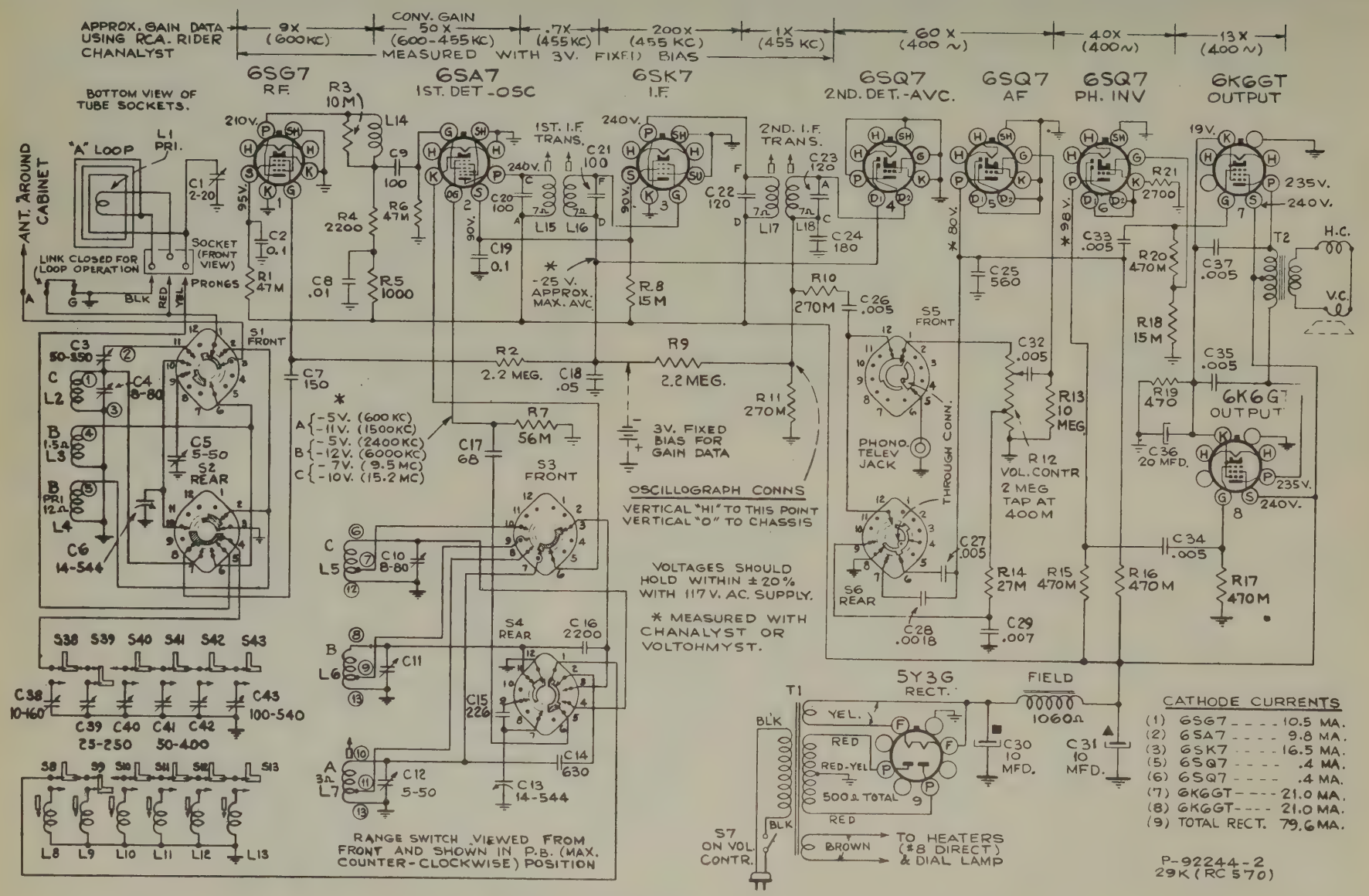

2- BP10 SPEAKERS STK.# 37807
D.P.D.T. TOGGLE SW.
BP10 OUTPUT TRANSFORMER STK.# 37806
TO INPUT OF AN AUDIO AMPLIFIER, OR TO AUDIO CHANNEL OF CHANALYST, OR TO 200 MICROAMP A.C. METER.

*"Phase Checker," using small PM speakers.*


RADIO
ALL HIGHS, LEAST LOWS
MINIMIZES BASS RESONANCE AND LOW-PITCHED INTERFERENCE. SPEECH POSITION
FULL TONE—ALL HIGHS AND ALL LOWS
FOR ORCHESTRA AND OPERA. BEST GENERAL POSITION.
ALL LOWS, MODERATE HIGHS
REDUCES STATIC AND HIGH-PITCHED INTERFERENCE
ALL LOWS, LEAST HIGHS
MINIMIZES STATIC AND HIGH-PITCHED INTERFERENCE
PHONO., TELEV., F.M.
ALL LOWS, LEAST HIGHS
MINIMIZES RECORD SURFACE NOISES AND HIGH-PITCHED TONES
ALL LOWS, MODERATE HIGHS
REDUCES RECORD SURFACE NOISES AND HIGH-PITCHED TONES
FULL TONE—ALL HIGHS AND ALL LOWS
FOR ORCHESTRA AND OPERA. BEST GENERAL POSITION
ALL HIGHS, LEAST LOWS
MINIMIZES BASS RESONANCE

**External Antenna.**—When using an External Antenna, Peak C3 for max. output on a station in the 31-meter band.






## Model 29K Schematic Diagram

**Model 29K2 has two speakers, connected as shown in the diagram on the facing page**

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in R.F. alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are in minimum capacity position. The drum is held to the shaft by means of plastic cement which must be securely fastened when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.** — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

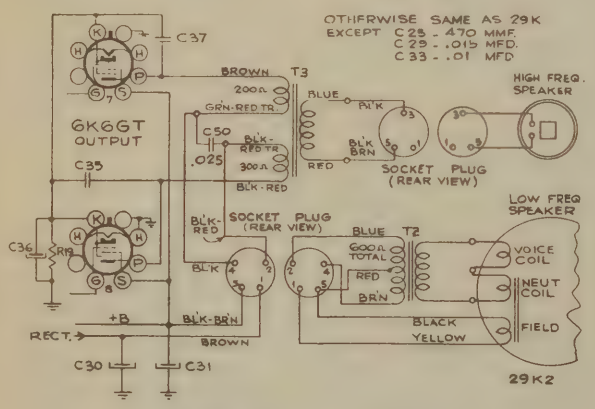
**Precautionary Lead Dress.—**

1. Dress all filament wiring away from audio and output tube grids.
2. The 226 mmfd. (C15) should be dressed away from all parts and wiring.
3. Leads from 2nd I.F. to tone switch should be dressed under the trimmer bank.
4. Speaker leads should be dressed close to chassis base and away from the phono plug.
5. Primary transformer lead should be twisted around A.C. lead to switch and dressed over top of transformer.
6. Dress C7 (150 mmfd. cap.) from range switch to R.F. socket away from all leads and metal parts.

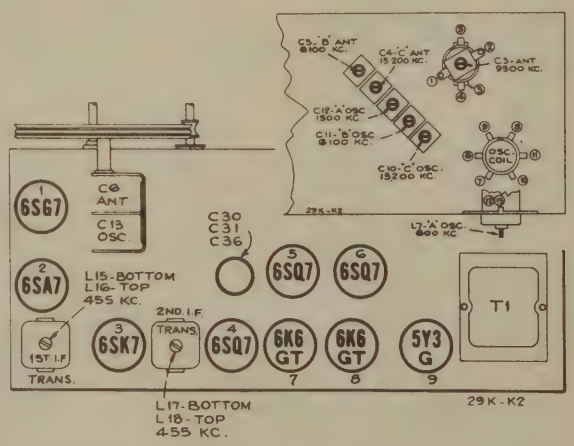
## Alignment Procedure

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Range Switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" | Quiet Point near 180° | L17 and L18 (2nd I-F Trans.) |
| 2 | 6SA7 Det. grid in series with .01 mfd. | | | | L-15 and L-16 (1st I-F Trans.) |
| 3 | Ant. section of Gang Condenser | 1,500 kc | "A" | 160° | C-12 (osc.) |
| 4 | | 600 kc | | 30.5° | L-7 (osc.) |
| 5 | Ant. terminal "A" in series with 47 mmf. link open | 6,100 kc | "B" | 161° | C-11 (osc.)* C-5 (ant.) |
| 6 | | 15,200 kc | "C" | 167° | C-10 (osc.)* C-4 (ant.) |
| 7 | | 9,500 kc | | 32° | C-3 (ant.) (Rock Gang) |
| 8 | | Repeat steps 6 and 7. | | | |
| 9 | Fasten chassis in cabinet, see that link is closed on antenna terminal board, indicator at left end of dial scales with gang at maximum capacity. | | | | |
| 10 | A radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 1,500 kc | "A" | 1,500 kc signal | C-1 (ant.) on loop |
| 11 | | 600 kc | | 600 kc | L-7 (osc.) (Rock Gang) |
| 12 | | Repeat steps 10 and 11. | | | |

*Use minimum capacity peak if two peaks can be obtained.
Note: Oscillator tracks above signal on all bands.




**Model 29K2 Speaker Connections**



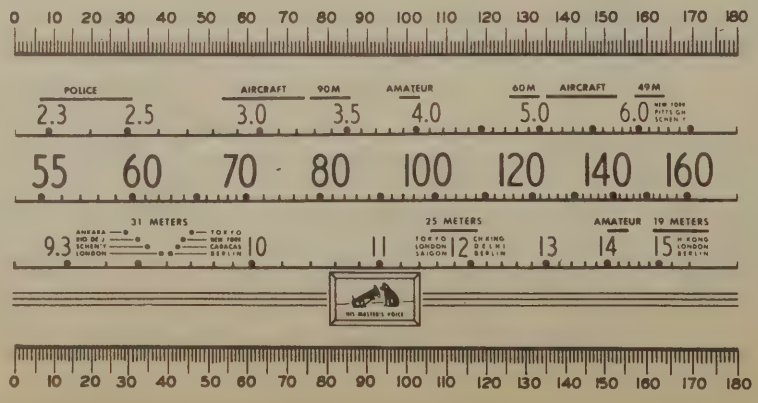

## 29K2 (RC-570-D)

### With 5-inch "EM" Speaker:

In 2nd production, the 5-inch speaker is changed from "PM" to "EM," as listed below:

SPEAKER ASSEMBLIES
(RL-86B-5)

| Stock No. | Description |
|---|---|
| 39543 | Coil—Field coil—450 ohms |
| 39567 | Cone—Cone complete with voice coil |
| 30870 | Plug—2-prong male plug for speaker |
| 5118 | Plug—3-prong male plug for speaker |



## Adjustment for Electric Tuning

This model has six push buttons for electric tuning. The buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the six desired stations, arranged in order from low to high frequencies.
2. Turn Range Control knob to "A" position, and manually tune in the first station on the list.

*Push Button Adjustments*

Turn the Loop Antenna to give minimum pickup of signal, no outside antenna should be used and link on antenna board should be closed.

3. Turn Range Control knob to "PB" and press push button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.
   Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push button antenna trimmers to minimum capacity before adjusting the oscillator cores.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining five stations in the same manner.
6. After all six stations are tuned-in on the buttons, turn the Loop Antenna to a position giving the best signal pickup and make a final careful adjustment of all core rods until best reception is obtained for each. Outdoor antenna should now be reconnected if used.

## Replacement Parts

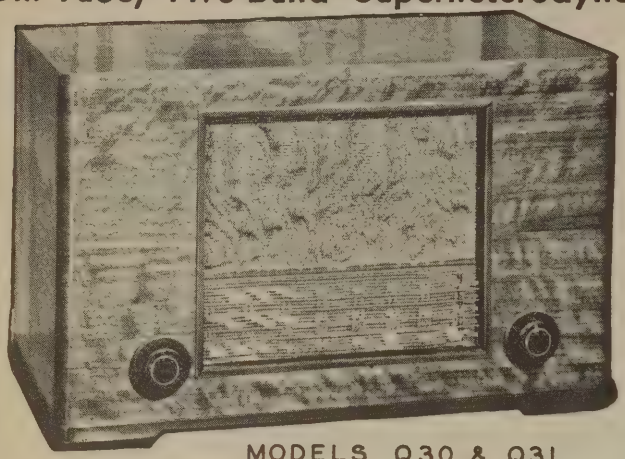
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES RC-570 (29K) RC-570C (29K2)** |
| 35966 | Board—"Antenna-Ground" board |
| 38571 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 400 volts, and 1 section of 20 mfd., 25 volts |
| 38368 | Capacitor—Adjustable trimmer—50-350 mmfd., for "C" band antenna coil |
| 38572 | Capacitor—Mica trimmer comprising 3 sections of 5-50 mmfd., and 2 sections of 8-80 mmfd. |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 34700 | Capacitor—120 mmfd. |
| 12725 | Capacitor—150 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 38830 | Capacitor—226 mmfd., silvered mica |
| 30433 | Capacitor—470 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 38831 | Capacitor—630 mmfd., silvered mica |
| 12951 | Capacitor—2200 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mmfd. |
| 37706 | Capacitor—.025 mmfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 38367 | Coil—Antenna coil |
| 38829 | Coil—Coil and resistor assembly |
| 38358 | Coil—Oscillator coil |
| 38315 | Coil—P.B. oscillator coil—high frequency |
| 37638 | Coil—P.B. oscillator coil—low frequency |
| 38570 | Condenser—Two gang variable tuning condenser |
| 38404 | Control—Volume control and power switch |
| 34662 | Cord—Pointer cord (approx. 76 in. overall length) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 38359 | Cup—Mounting cup and bushing for oscillator coil |
| 38361 | Drum—Condenser drive drum |
| 5119 | Plug—3 contact female plug for connector cable. |
| 5040 | Plug—4-contact female plug for speaker cable |
| 38832 | Plug—Pin plug for loop leads, Pkg. 5 |
| 31373 | Pulley—Drive cord pulley |
| 35885 | Resistor—470 ohms, 2 watts |
| 14720 | Resistor—1000 ohms, ½ watt |
| 34767 | Resistor—2200 ohms, ½ watt |
| 14024 | Resistor—2700 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watts |
| 30409 | Resistor—27,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30787 | Resistor—47,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 35589 | Shaft—Tuning knob shaft |
| 35772 | Shield—Bottom end shield for power transformer No. 35959 |
| 35709 | Shield—Top end shield for power transformer No. 35959 |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Pointer cord spring |
| 12007 | Spring—Retaining spring for adjustable core and stud |
| 38575 | Switch—P.B. selector switch |
| 38577 | Switch—Range switch |
| 38576 | Switch—Tone switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 38799 | Transformer—Output transformer (29K2) (T3). |
| 35588 | Transformer—Power transformer—105-120 volts, 25 cycle |
| 35959 | Transformer—Power transformer—105-120 volts, 50/60 cycle—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-70J-1)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil—1060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4 prong male plug for speaker |
| 36146 | Support—Metal cone support |
| 33444 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLY RL-81B-6 (PM) 29K2** |
| 35849 | Cap—Dust cap |
| 38683 | Cone—Cone complete with voice coil |
| 5118 | Plug—3 prong male plug for speaker |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38375 | Button—Push button |
| 38684 | Capacitor—Mica trimmer—2-20 mmfd. |
| 38584 | Channel—Rubber channel to hold dial in escutcheon (2 required) |
| 38579 | Coil—Loop primary coil |
| 38708 | Decalcomania—Control panel decal |
| 38583 | Dial—Glass dial scale |
| 38582 | Escutcheon—Dial scale escutcheon |
| 38709 | Indicator—Station selector indicator |
| 35814 | Knob—Control knob |
| 11891 | Lamp—Dial lamp |
| 38578 | Loop—Antenna loop complete |
| 34317 | Marker—Station markers |
| 33774 | Mounting—Speaker mounting hardware |
| 38580 | Pivot—Loop bracket and pivot tube—located on top of loop frame |
| 38707 | Plate—Dial plate complete—less indicator pointer |
| 36422 | Socket—Loop cable socket—located on loop |
| 30900 | Spring—Retaining spring for knob |
| 34053 | Spring—Retaining spring for push button |
| 38581 | Swivel—Loop support and swivel—located on bottom of loop frame |

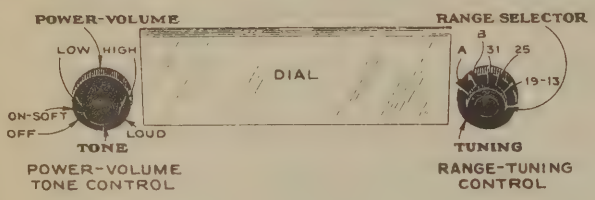
# MODELS Q30 and Q31

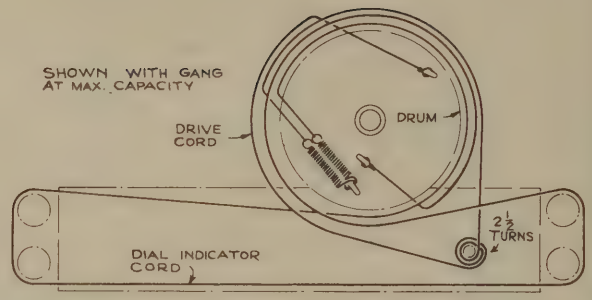
## Chassis No. RC-538B RC-538C

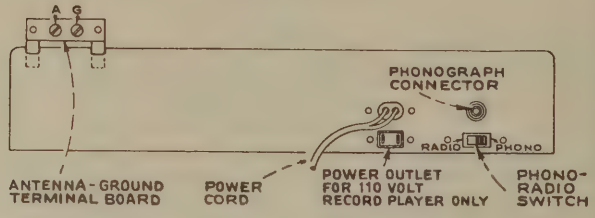
## Six-Tube, Five-Band Superheterodyne



MODELS Q30 & Q31




## Electrical and Mechanical Specifications MODEL Q30

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (556-174 m) |
| Medium Wave ("B" Band) | 3.0-9.5 mc (100-31.6 m) |
| 31 Meter Spread Band | 9.5-11.8 mc (31.6-25.4 m) |
| 25 Meter Spread Band | 11.7-15.2 mc (25.6-19.8 m) |
| 19-13 Meter Spread Band | 15.05-23.0 mc (20-13.0 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Det. A-F Amplifier AVC |
| (5) RCA-6F6G | Power Output |
| (6) RCA-5Y3G | Rectifier |

PILOT LAMPS ..... 2—Type 44, 6.3 volts, 0.25 amps.

POWER SUPPLY RATINGS

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 75 watts |
| 105-125 volts, 25-60 cycles | 75 watts |
| 100-130, 140-160, 200-250 volts, 50-60 cycles | 75 watts |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 9 x 6¼ inch elliptical electrodynamic |
| V.C. Impedance | 3.7 ohms at 400 cycles |
| Identification Number | 92196-1 |

| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS (inches) | 11½ | 18⅞ | 10⅜ |
| Chassis Base Dimensions (inches) | 2⅞ | 15½ | 6½ |
| Overall Chassis Height | | 7⅞ inches | |
| Tuning Drive Ratio | | 20 to 1 | |

## Electrical and Mechanical Specifications MODEL Q31

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (556-174 m.) |
| Medium Wave ("B" Band) | 3.0-9.5 mc (100-31.6 m.) |
| 31 Meter Spread Band | 9.5-11.8 mc (31.6-25.4 m.) |
| 25 Meter Spread Band | 11.7-15.2 mc (25.6-19.8 m.) |
| 19-13 Meter Spread Band | 15.05-23.0 mc (20-13 m.) |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6S7 | R-F Amplifier |
| (2) RCA-12SA7 | 1st Detector-Oscillator |
| (3) RCA-6S7 | I-F Amplifier |
| (4) RCA-12SQ7 | 2nd Det. A-F Amplifier AVC |
| (5) RCA-50L6GT | Power Output |
| (6) RCA-35Z5GT | Rectifier |

PILOT LAMPS ..... 1-Type 47, 6-8 v., 0.15 amps.

POWER SUPPLY RATINGS

| | |
|---|---|
| 105-125 volts, 40 to 100 cycles AC, or DC | 31 watts |
| 160-200 volts, 40 to 100 cycles AC, or DC | 50 watts |
| 210-250 volts, 40 to 100 cycles AC, or DC | 68 watts |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 9 in. x 6¼ in. elliptical permanent magnet dynamic |
| V.C. Impedance | 3.7 ohms at 400 cycles |
| Identification Number | 92196-2 |

| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS (inches) | 11⅛ | 18⅞ | 10⅜ |
| Chassis Base Dimensions (inches) | 2⅞ | 15⅛ | 6½ |
| Overall Chassis Height | | 7 13/16 inches | |
| Tuning Drive Ratio | | 20 to 1 | |

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

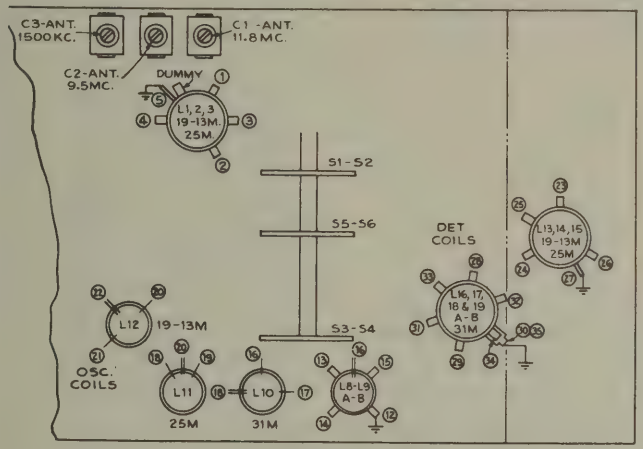
**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.




**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range Switch | Turn radio Dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" band | Quiet point near 600 kc (149.5°) end of dial | L23-L22 2nd I-F transformer |
| 2 | 6SA7 1st det. grid in series with .01 mfd. | | | | L21-L20 1st I-F transformer |
| 3 | Antenna terminal in series with 300 ohms | 11.8 mc | 25 meter band | 11.8 mc (138.5°) | L11 (osc.) C1 (ant.) C20 (det.) Rock in |
| 4 | | 15.2 mc | | 15.2 mc (18.5°) | C15 (osc.)*† |
| 5 | Repeat steps 3 and 4 until aligned. | | | | |
| 6 | Antenna terminal in series with 300 ohms | 15.2 mc | 19-13 meter band | 15.2 mc (156°) | L12 (osc.)** |
| 7 | | 9.5 mc | 31 meter band | 9.5 mc (156°) | L10 (osc.)** C2 (ant.) C25 (det.)*** Rock in |
| 8 | | 9.5 mc | "B" band | 9.5 mc (11.5°) | C10 (osc.)* |
| 9 | Antenna terminal in series with 200 mmfd. | 1,500 kc | "A" band | 1,500 kc (27°) | C12 (osc.) C3 (ant.) C24 (det.) |
| 10 | | 600 kc | | 600 kc (149.5°) | L8 (osc.) Rock in |
| 11 | Repeat steps 9 and 10. | | | | |

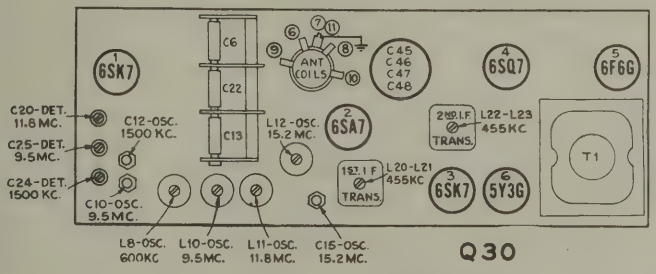
* Use minimum capacity peak if two can be obtained.

** Peak at minimum plunger position if two peaks can be obtained.

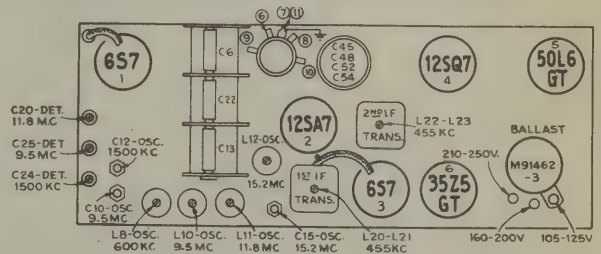
*** Use maximum capacity peak if two peaks can be obtained.

† Check image to determine that C15 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

NOTE: Oscillator tracks above signals on all bands.




Q30



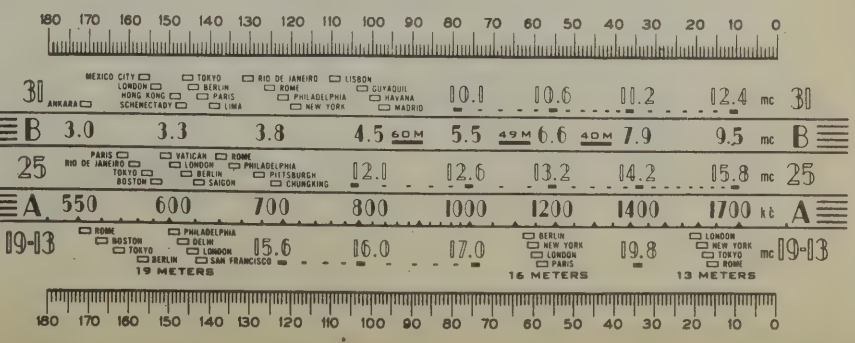

Q31

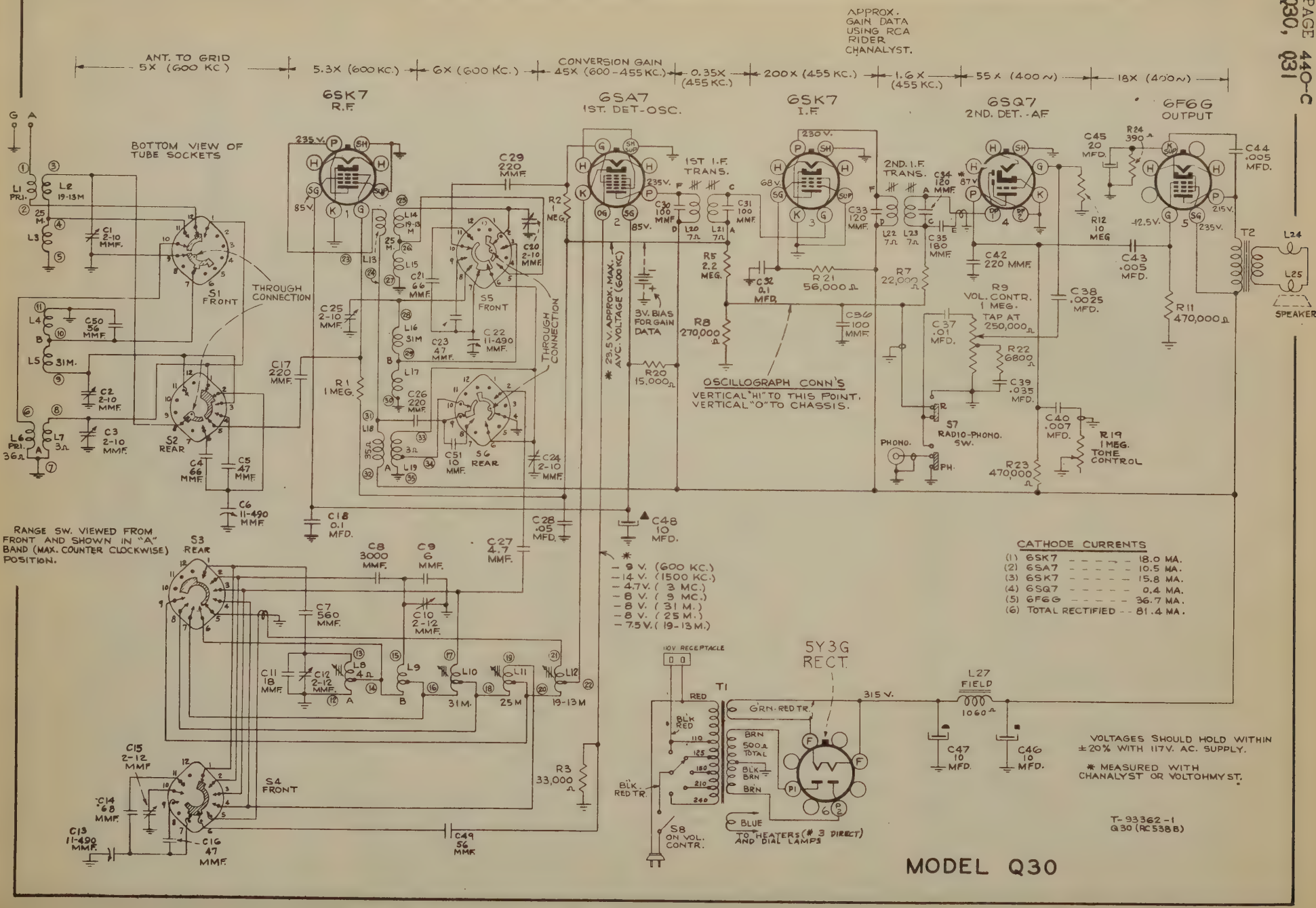
*Location and function of trimmers is identical for both models. For Q31 - in tabulation above - substitute 6S7 for 6SK7 and 12SA7 for 6SA7.*

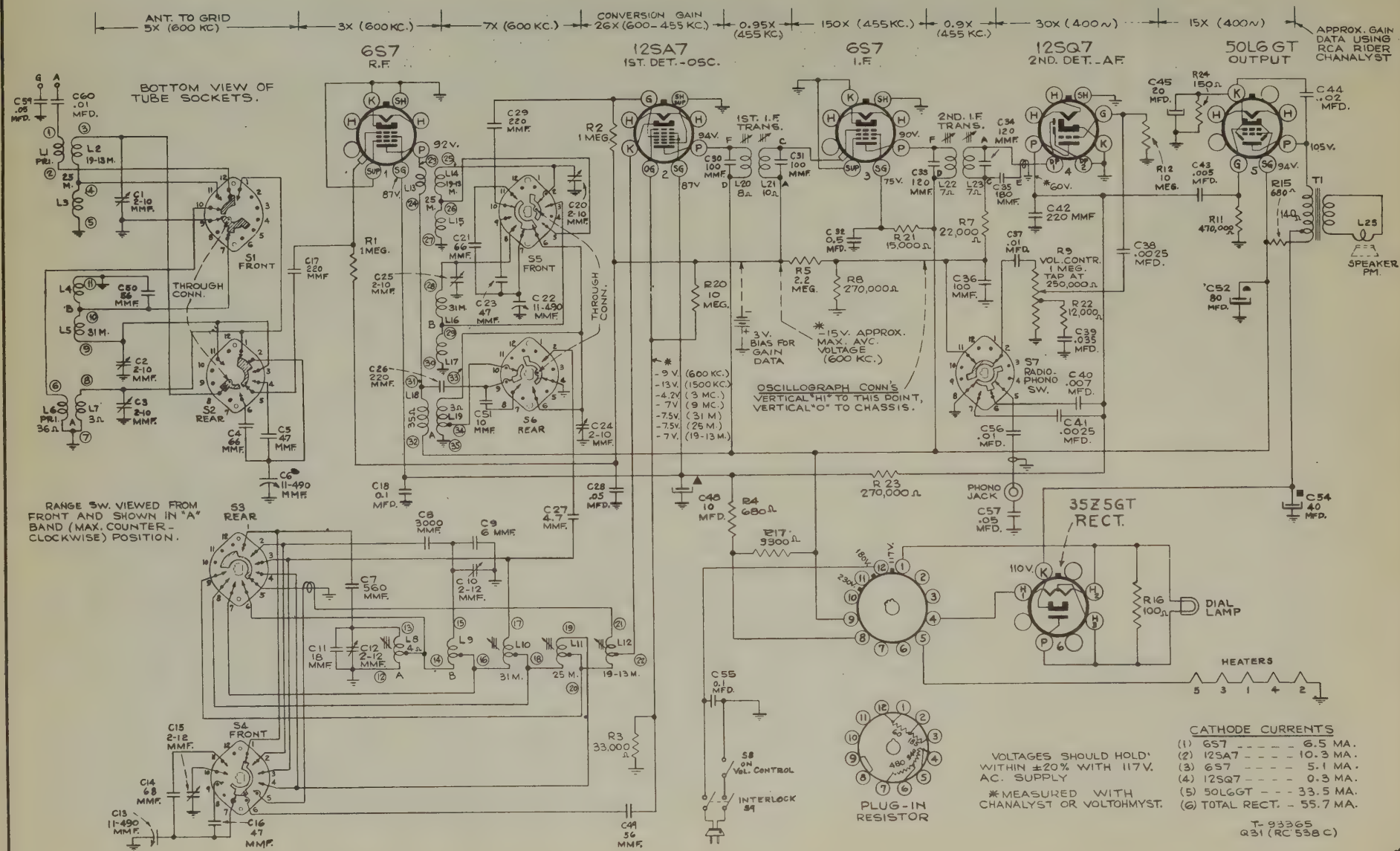
## Calibration Scale

*Reduced Reproduction of Receiver Dial and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 150° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
31
MEXICO CITY ANKARA TOKYO LONDON HONG KONG SCHENECTADY RIO DE JANEIRO ROME BERLIN PARIS LIMA LISBON GUYAQUIL PHILADELPHIA NEW YORK HAVANA MADRID
10.1 10.6 11.2 12.4 mc 31
B 3.0 3.3 3.8 4.5 60M 5.5 49M 6.6 40M 7.9 9.5 mc B
25
PARIS RIO DE JANEIRO TOKYO BOSTON VATICAN ROME LONDON BERLIN PHILADELPHIA PITTSBURGH CHUNGKING SAIGON
12.1 12.6 13.2 14.2 15.8 mc 25
A 550 600 700 800 1000 1200 1400 1700 kc A
19-13
ROME BOSTON TOKYO BERLIN PHILADELPHIA DELHI LONDON SAN FRANCISCO
15.6 16.0 17.0 19.8 mc 19-13
19 METERS
BERLIN NEW YORK LONDON PARIS
16 METERS
LONDON NEW YORK TOKYO ROME
13 METERS
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0


APPROX. GAIN DATA USING RCA RIDER CHANALYST.
ANT. TO GRID 5X (600 KC)
5.3X (600 KC.)
6X (600 KC.)
CONVERSION GAIN 45X (600-455 KC.)
0.35X (455 KC.)
200X (455 KC.)
1.6X (455 KC.)
55X (400 ~)
18X (400 ~)
6SK7 R.F.
6SA7 1ST. DET.-OSC.
6SK7 I.F.
6SQ7 2ND. DET.-AF
6F6G OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
THROUGH CONNECTION
1ST I.F. TRANS.
2ND. I.F. TRANS.
3V. BIAS FOR GAIN DATA
23.5 V. APPROX. MAX. AVC. VOLTAGE (600 KC.)
OSCILLOGRAPH CONN'S
VERTICAL "HI" TO THIS POINT.
VERTICAL "O" TO CHASSIS.
R9 VOL. CONTR. 1 MEG.
TAP AT 250,000Ω
S7 RADIO-PHONO. SW.
R19 1 MEG. TONE CONTROL
SPEAKER
RANGE SW. VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAX. COUNTER CLOCKWISE) POSITION.
S1 FRONT
S2 REAR
S3 REAR
S4 FRONT
S5 FRONT
S6 REAR
- 9 V. (600 KC.)
- 14 V. (1500 KC.)
- 4.7 V. ( 3 MC.)
- 6 V. ( 9 MC.)
- 8 V. ( 31 M.)
- 8 V. ( 25 M.)
- 7.5 V. ( 19-13 M.)
CATHODE CURRENTS
(1) 6SK7 - - - - - 18.0 MA.
(2) 6SA7 - - - - - 10.5 MA.
(3) 6SK7 - - - - - 15.8 MA.
(4) 6SQ7 - - - - - 0.4 MA.
(5) 6F6G - - - - - 36.7 MA.
(6) TOTAL RECTIFIED - - 81.4 MA.
110V RECEPTACLE
5Y3G RECT.
315 V.
L27 FIELD 1060Ω
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
T-93362-1
Q30 (RC538B)
MODEL Q30


ANT. TO GRID 5X (600 KC)
3X (600 KC.)
7X (600 KC.)
CONVERSION GAIN 26X (600-455 KC.)
0.95X (455 KC.)
150X (455 KC.)
0.9X (455 KC.)
30X (400 ~)
15X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6S7 R.F.
12SA7 1ST. DET.-OSC.
6S7 I.F.
12SQ7 2ND. DET.-AF.
50L6GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS.
1ST. I.F. TRANS.
2ND. I.F. TRANS.
THROUGH CONN.
S1 FRONT
S2 REAR
S3 REAR
S4 FRONT
S5 FRONT
S6 REAR
S7 RADIO-PHONO SW.
3V. BIAS FOR GAIN DATA
-15V. APPROX. MAX. AVC. VOLTAGE (600 KC.)
OSCILLOGRAPH CONN'S VERTICAL "HI" TO THIS POINT, VERTICAL "O" TO CHASSIS.
VOL. CONTR. 1 MEG. TAP AT 250,000Ω
PHONO JACK
SPEAKER PM.
35Z5GT RECT.
DIAL LAMP
HEATERS
RANGE SW. VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAX. COUNTER-CLOCKWISE) POSITION.
SB ON Vol. CONTROL
INTERLOCK S9
PLUG-IN RESISTOR
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117V. AC. SUPPLY
*MEASURED WITH CHANALYST OR VOLTOHMYST.
CATHODE CURRENTS
(1) 6S7 - - - - - 6.5 MA.
(2) 12SA7 - - - - 10.3 MA.
(3) 6S7 - - - - 5.1 MA.
(4) 12SQ7 - - - - 0.3 MA.
(5) 50L6GT - - - 33.5 MA.
(6) TOTAL RECT. - 55.7 MA.
T-93365
Q31 (RC 538 C)

# MODEL Q31

# MODEL Q30

**Precautionary Lead Dress:**

1. Dress green leads from antenna and R-F gang sections away from all metal including chassis shield plates. The spaghetti covered braid in the antenna section should be at least ½ inch away from gang.
2. Dress toothpick capacitors and switch leads away from and edge on to shield plates.
3. Closely twist ground lead about 2nd I-F transformer diode lead and dress close to chassis.
4. Dress volume control-arm lead and capacitor close to front apron and away from output tubes by-pass capacitors.
5. 6SQ7 10 megohm grid resistor should have no lead length on the grid side.
6. Dress capacitor high side of volume control toward base and as far as possible from a-c switch.
7. Leads to converter socket should not impede flexible mounting.
8. Converter control grid: clear of any other leads, especially filament leads which must be at least ½ inch away. The meg-ohm grid leak must have its body as close to grid as possible.
9. Dress oscillator grid and control grid capacitors apart.
10. Dress all filament and B+ leads close to chassis. Dress speaker leads close to base.
11. Dress phono lead and diode return lead to switch away from power circuits and output tube sockets.
12. Dress power transformer leads between back apron, power transformer and 5Y3 socket.
13. Brown lead from electrolytic to rectifier tube should be well away from I.F. transformer parts.
14. AC leads to switch should be twisted and away from all parts.
15. Capacitor to phono switch and its lead should be away from all other leads.
16. Brown speaker leads should be dressed down and away from 6SQ7 socket.
17. C-38 should be close to chassis and away from all other leads.
18. Shielded lead from I.F. to phono switch should be away from all else.

## Replacement Parts MODEL Q30

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-538B)** |
| 34502 | Arm—Operating arm between knob shaft and range switch |
| 37053 | Board—"Antenna-Ground" board |
| 37896 | Bracket—L.H. bracket complete with 2 drive cord pulleys |
| 37895 | Bracket—R.H. bracket complete with 2 drive cord pulleys |
| 35795 | Calibrator—Drive drum calibrator |
| 37059 | Capacitor—Mica trimmer comprising 3 sections of 2.5-10 mmfd. each (C1, C2, C3) (C20, C24, C25) |
| 33097 | Capacitor—4.7 mmfd. (C27) |
| 35646 | Capacitor—6 mmfd. (C9) |
| 13200 | Capacitor—10 mmfd. (C51) |
| 31350 | Capacitor—18 mmfd. (C11) |
| 35644 | Capacitor—47 mmfd., ceramic (C16) |
| 37329 | Capacitor—47 mmfd., silvered mica (C5, C23) |
| 12723 | Capacitor—56 mmfd. (C49, C50) |
| 36072 | Capacitor—66 mmfd. (C4, C21) |
| 35645 | Capacitor—68 mmfd. (C14) |
| 12720 | Capacitor—100 mmfd., moulded mica (C36) |
| 30904 | Capacitor—100 mmfd., mica, I.F. (C30, C31) |
| 31813 | Capacitor—120 mmfd., I.F. (C33, C34) |
| 36616 | Capacitor—220 mmfd., mica (C35) |
| 12694 | Capacitor—220 mmfd., moulded mica (C17, C26, C29, C42) |
| 31433 | Capacitor—560 mmfd. (C7) |
| 35643 | Capacitor—3,000 mmfd. (C8) |
| 34459 | Capacitor—.0025 mfd. (C38) |
| 33584 | Capacitor—.005 mfd. (C43, C44) |
| 5148 | Capacitor—.007 mfd. (C40) |
| 4937 | Capacitor—.01 mfd. (C37) |
| 5196 | Capacitor—.035 mfd. (C39) |
| 32787 | Capacitor—.05 mfd. (C28) |
| 4839 | Capacitor—0.1 mfd. (C18, C32) |
| 33014 | Capacitor—Electrolytic comprising 3 sections of 10 mfd. 450 volts each, and 1 section of 20 mfd. 25 volts (C46, C47, C48, C45) |
| 37055 | Coil—Antenna coil—"A," "B" and "31 meter" band |
| 37056 | Coil—Antenna coil—"25 meter" and "19-13 meter" band |
| 37093 | Coil—Oscillator coil—A, B, C band |
| 35624 | Coil—Oscillator coil—"19-13 meter" band |
| 35625 | Coil—Oscillator coil—"25 meter" band |
| 35626 | Coil—Oscillator coil—"31 meter" band |
| 37057 | Coil—R.F. coil—"A," "B" and "31 meter" bands |
| 37058 | Coil—R.F. coil—"25 meter" and "19-13 meter" bands |
| 12714 | Condenser—Air trimmer—2-12 mmfd. (C10, C12, C15) |
| 37151 | Condenser—Variable tuning condenser (C6, C13, C22) |
| 37052 | Control—Tone control (R19) |
| 37051 | Control—Volume control and power switch (R9, S8) |
| 34662 | Cord—Indicator drive cord (approx. 72-in. over-all lgth.) |
| 32634 | Cord—Tuning condenser drive cord (approx. 29-in. overall lgth.) |
| 35788 | Core—Adjustable core and stud for A, B, C band oscillator coil |
| 31259 | Core—Adjustable core and stud for "25 meter," "19-13 meter" and "31 meter" band oscillator coils |
| 33773 | Drum—Drive drum |
| 33185 | Gear—Volume control gear and hub |
| 33767 | Link—Operating link between knob shaft and range switch |
| 5119 | Plug—3-contact female plug for speaker |
| 35630 | Pulley—Drive cord pulley |
| 31388 | Resistor—390 ohms, 1 watt (R24) |
| 14659 | Resistor—6,800 ohms, ½ watt (R22) |
| 35595 | Resistor—15,000 ohms, 3 watts (R20) |
| 13998 | Resistor—22,000 ohms, ½ watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R3) |
| 30650 | Resistor—56,000 ohms, ½ watt (R21) |
| 30651 | Resistor—270,000 ohms, ½ watt (R8) |
| 30648 | Resistor—470,000 ohms, ½ watt (R11, R23) |
| 13730 | Resistor—1 meg., ½ watt (R1, R2) |
| 12679 | Resistor—2.2 meg., ½ watt (R5) |
| 30992 | Resistor—10 meg., ½ watt (R12) |
| 31611 | Screw—No. 8-32 milled head set screw for gear, Stock No. 33185 |
| 14350 | Screw—No. 8-32 square head set screw for drive drum |
| 37893 | Shaft—Range switch knob shaft |
| 34132 | Shaft—Shaft and gear for tone control |
| 37894 | Shaft—Tuning shaft and flywheel |
| 31364 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 36637 | Socket—Power line receptacle |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord and pointer cord spring |
| 33491 | Switch—Radio-phono switch |
| 37050 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer (L20, L21) |
| 36615 | Transformer—Second I.F. transformer (L22, L23) |
| 31734 | Transformer—Power transformer, 105-120 volts, 25 cycles |
| 31735 | Transformer—Power transformer, 105-130, 140-160, 200-250 volts, 50-60 cycles |
| 2917 | Washer—"C" washer for tuning drive |
| | **SPEAKER ASSEMBLIES (92196-501)** |
| 37963 | Coil—Field coil—1,060 ohms |
| 37947 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug |
| 37948 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37954 | Back—Back cover |
| 36981 | Bracket—Lamp bracket |
| 35387 | Decalcomania—Power-volume decal |
| 37839 | Decalcomania—Range switch decal |
| 35388 | Decalcomania—Tone switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 37930 | Dial—Glass dial scale |
| 37922 | Indicator—Station selector indicator |
| 34570 | Knob—Range switch knob |
| 34136 | Knob—Tuning or volume control knob |
| 34137 | Knob—Tone switch knob |
| 11891 | Lamp—Dial lamp |
| 37966 | Rail—Station selector indicator guide rail |
| 4982 | Spring—Retaining spring for knob, Stock No. 34136 |
| 14270 | Spring—Retaining spring for knobs, Stock Nos. 34570 and 34137 |

# MODEL Q31

**Precautionary Lead Dress**

Dress the indicated circuit parts as follows:

1. Toothpick condensers in the ant., R. F. circuits and gang leads: away from metal especially shield plates; condensers at right angles to shield plates.
2. Speaker, pilot, and output filament leads: between terminal board and output tube socket and against the base.
3. Leads to converter socket so that they do not impede the flexible mounting.
4. Oscillator grid and control grid condensers (to 6SA7) well apart, but at least ¾ in. from shield plates.
5. All filament and B+ leads close to chassis.
6. Black lead between the RF trimmer bank and switch: over the short wave RF coil and close to it.
7. Blue plate lead to 2nd I.F. transformer: under the brown and the red leads, and away from first I.F. transformer.
8. 2nd I.F. to diode lead (black): close to chassis and with yellow ground lead twisted about it closely.
9. Volume control high side condenser: close to base.
10. Phono lead and diode return lead to switch: away from power circuits and output tube socket.
11. .05 cond. from phono shield to ground up, under, and against joint of shielded cable.
12. R-12 (10 meg. grid res. on 12SQ7) down against chassis.
13. Yellow lead from switch lug 2 to B lug on 2nd I.F. down against chassis and away from plate and fil. leads.

## Replacement Parts MODEL Q31

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-538C)** |
| 34502 | Arm—Operating arm between knob shaft and range switch |
| 37891 | Ballast—Ballast tube resistor |
| 37896 | Bracket—L.H. bracket complete with 2 drive cord pulleys |
| 37895 | Bracket—R.H. bracket complete with 2 drive cord pulleys |
| 35795 | Calibrator—Drive drum calibrator |
| 37059 | Capacitor—Mica trimmer comprising 3 sections of 2.5—10 mmfd. each (C1, C2, C3, C20, C24, C25) |
| 33097 | Capacitor—4.7 mmfd. (C27) |
| 35646 | Capacitor—6 mmfd. (C9) |
| 13200 | Capacitor—10 mmfd. (C51) |
| 31350 | Capacitor—18 mmfd. (C11) |
| 35644 | Capacitor—47 mmfd., ceramic (C16) |
| 37329 | Capacitor—47 mmfd., silvered mica (C5, C23) |
| 12723 | Capacitor—56 mmfd. (C49, C50) |
| 36072 | Capacitor—66 mmfd. (C4, C21) |
| 35645 | Capacitor—68 mmfd. (C14) |
| 12720 | Capacitor—100 mmfd., moulded mica (C36) |
| 30904 | Capacitor—100 mmfd., mica I.F. (C30, C31) |
| 31813 | Capacitor—120 mmfd. I.F. (C33, C34) |
| 36616 | Capacitor—220 mmfd., mica (C35) |
| 12694 | Capacitor—220 mmfd., moulded mica (C17, C26, C29, C42) |
| 31433 | Capacitor—560 mmfd. (C7) |
| 35643 | Capacitor—3,000 mmfd. (C8) |
| 34459 | Capacitor—.0025 mfd. (C38) |
| 33584 | Capacitor—.005 mfd. (C43) |
| 5148 | Capacitor—.007 mfd. (C40) |
| 4937 | Capacitor—.01 mfd. (C37) |
| 5196 | Capacitor—.035 mfd. (C39) |
| 4886 | Capacitor—.05 mfd. (C57) |
| 32787 | Capacitor—.05 mfd. (C28) |
| 4839 | Capacitor—0.1 mfd. (C18) |
| 30867 | Capacitor—0.5 mfd. (C32) |
| 37892 | Capacitor—Electrolytic comprising 1 section of 80 mfd. 250 volts, 1 section of 40 mfd. 250 volts, 1 section of 10 mfd. 250 volts, and 1 section of 20 mfd. 25 volts (C52, C54, C48, C45) |
| 37055 | Coil—Antenna coil—"A"-"B" and "31 meter" band |
| 37056 | Coil—Antenna coil—"25 meter" and "19-13 meter" band |
| 37093 | Coil—Oscillator coil—A-B-C band |
| 35624 | Coil—Oscillator coil "19-13 meter" band |
| 35625 | Coil—Oscillator coil—"25 meter" band |
| 35626 | Coil—Oscillator coil—"31 meter" band |
| 37057 | Coil—R.F. coil—"A"-"B" and "31 meter" bands |
| 37058 | Coil—R.F. coil—"25 meter" and "19-13 meter" bands |
| 12714 | Condenser—Air trimmer—2-12 mmfd. (C10, C12, C15) |
| 37151 | Condenser—Variable tuning condenser (C6, C13, C22) |
| 37051 | Control—Volume control and power switch |
| 34662 | Cord—Indicator drive cord (approx. 72 in. overall lgth.) |
| 32634 | Cord—Tuning condenser drive cord (approx. 29 in. overall lgth.) |
| 35788 | Core—Adjustable core and stud for A-B-C band oscillator coil |
| 31259 | Core—Adjustable core and stud for "25 meter," "19-13 meter" and "31 meter" band oscillator coils |
| 33773 | Drum—Drive drum |
| 33185 | Gear—Volume control gear and hub |
| 33767 | Link—Operating link between knob shaft and range switch |
| 5119 | Plug—3-contact female plug for speaker |
| 35630 | Pulley—Drive cord pulley |
| 37891 | Resistor—Ballast tube resistor |
| 35711 | Resistor—100 ohms, 4 watts |
| 30785 | Resistor—150 ohms, 1 watt |
| 31024 | Resistor—680 ohms, ½ watt |
| 38325 | Resistor—680 ohms, 2 watts |
| 30150 | Resistor—3,300 ohms, 1 watt |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 31611 | Screw—No. 8-32 milled head set screw for gear, Stock No. 33185 |
| 14350 | Screw—No. 8-32 square head set screw for drive drum |
| 37893 | Shaft—Range switch knob shaft |
| 34132 | Shaft—Shaft and gear for tone control |
| 37894 | Shaft—Tuning shaft and flywheel |
| 35634 | Socket—Ballast tube resistor socket—"Remove terminals not required" |
| 31365 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord and pointer cord spring |
| 33491 | Switch—Radio-phono switch |
| 37050 | Switch—Range switch |
| 34602 | Switch—Tone switch |
| 35636 | Transformer—First I.F. transformer |
| 36615 | Transformer—Second I.F. transformer |
| 37891 | Tube—Ballast tube resistor |
| 2917 | Washer—"C" washer for tuning drive |
| | **SPEAKER ASSEMBLIES (92196-502)** |
| 37947 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug |
| 37950 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37953 | Back—Back cover complete—less power cord |
| 36981 | Bracket—Lamp bracket |
| 32836 | Cord—Power cord and plug |
| 36103 | Decalcomania—"Off-Volume" decal |
| 37839 | Decalcomania—Range switch decal |
| 35392 | Decalcomania—Trade mark decal |
| 35391 | Decalcomania—Tuning decal |
| 37931 | Dial—Glass dial scale |
| 37922 | Indicator—Station selector indicator |
| 34570 | Knob—Range switch or tone control knob |
| 34136 | Knob—Tuning knob |
| 38326 | Knob—Volume control and power switch knob |
| 31480 | Lamp—Dial lamp |
| 37966 | Rail—Station selector indicator guide rail |
| 4982 | Spring—Retaining spring for knobs, Stock Nos. 34136 and 38326 |
| 14270 | Spring—Retaining spring for knob, Stock No. 34570 |

# MODELS U-30 U-126 U-128 U-129 and 910KG

Chassis No. RC-335KR, RC-335D RC-335K RC-335F

## Ten-Tube, Three-Band, Electric Tuning, A-C, Radio and Victrolas

## Electrical Specifications

**Frequency Ranges**

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "Medium Wave" (B) | 2,300-7,000 kc |
| "Short Wave" (C) | 7,000-22,000 kc |

**R-F Alignment Frequencies**

| | |
|---|---|
| Band "C" | 20,000 kc (osc., ant.) |
| Band "B" | 6,100 kc (osc.) |
| Band "A" | 600 kc (osc.), 1,500 kc (osc., ant.) |

**Intermediate Frequency** ..... 455 kc

**RCA Tube Complement**

| | | |
|---|---|---|
| (1) RCA-6A8 ..... First Det. | (5) RCA-6F5 ..... First Audio | (8) RCA-6F6 ..... Power Output |
| (2) RCA-6J7 ..... Oscillator | (6) RCA-6F5 ..... Phase Inverter | (9) RCA-5U4-G or 5T4 ... Rectifier |
| (3) RCA-6K7 ..... I-F Amp. | (7) RCA-6F6 ..... Power Output | (10) RCA-6U5 ..... "Magic Eye" |
| (4) RCA-6H6 .. 2nd Det. and A.V.C. | | |

**Power Supply Rating—Models U-126, U-128, U-30, U-129**

| | Radio Only | Total |
|---|---|---|
| A | 105-125 volts, 50-60 cycles, 120 watts | 145 watts |
| A-6 | 105-125 volts, 60 cycles, 120 watts | 145 watts |
| B-2 | 105-125 volts, 25 cycles, 120 watts | 145 watts |
| C | 105-130/140-160/200-250 volts, 50-60 cycles, 120 watts | 145 watts |
| C-6 | 105-130/140-160/200-250 volts, 60 cycles, 120 watts | 145 watts |

**Power Supply Rating—Model 910KG**

| | |
|---|---|
| A | 105-125 volts, 50-60 cycles, 125 watts |
| B | 105-125 volts, 25 cycles, 125 watts |
| C | 105-130/140-160/200-250 volts, 50-60 cycles, 125 watts |

**Power Output**

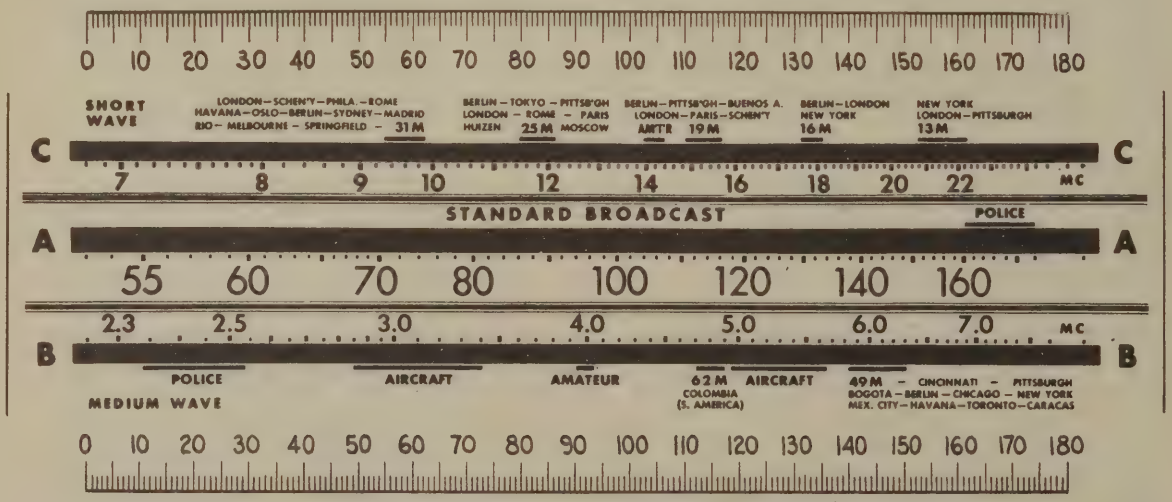
| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

**Loudspeaker**

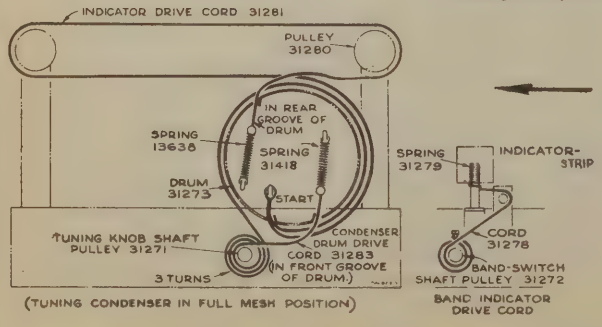
| | |
|---|---|
| Type | 12-inch Electrodynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |

**Phonograph**

| | Model U-126 | Model U-128, U-30, U-129 |
|---|---|---|
| Type | Manual | Automatic—Manual |
| Record Capacity | one 10-inch or one 12-inch | Seven ten or twelve inch |
| Turntable Speed | 78 R.P.M. (Adjustable) | 78 R.P.M. (Adjustable) |
| Type Pickup | Crystal | Crystal |
| Pickup Impedance | 80,000 ohms at 1,000 cycles | 80,000 ohms at 1,000 cycles |

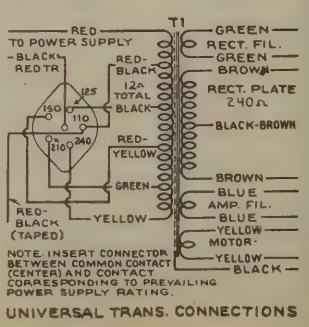



*-Tuning Dial, and Corresponding 0-180° Calibration Scale*



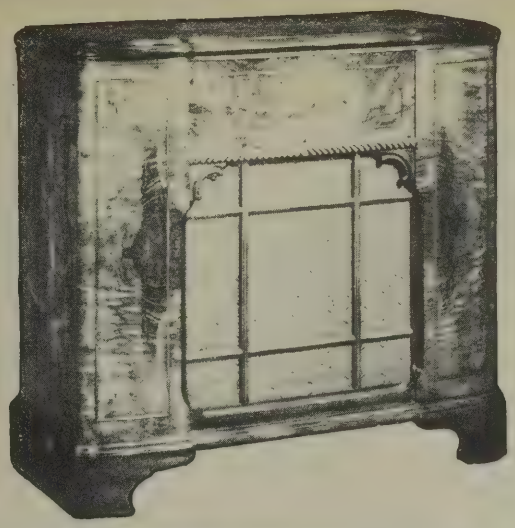

*Dial Mechanism*

Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

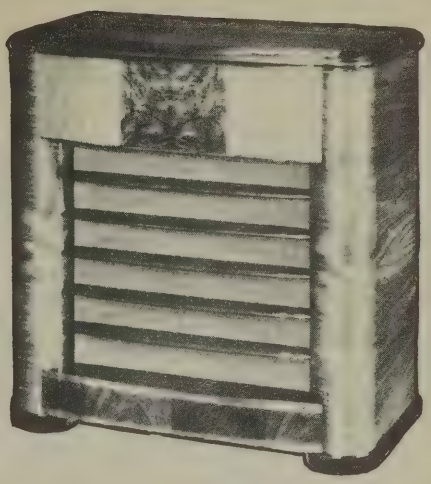



UNIVERSAL TRANS. CONNECTIONS

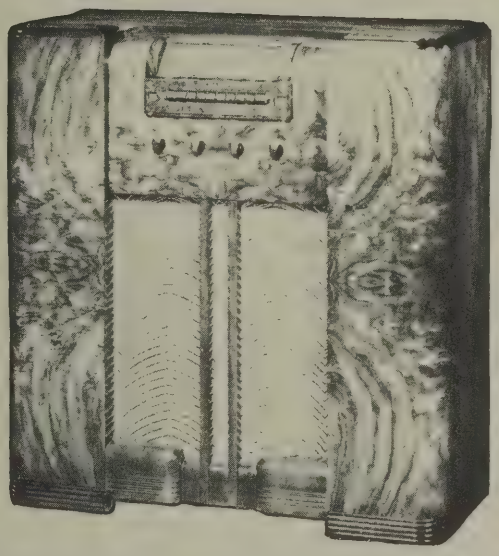
REFER TO INDEX FOR DATA ON ELECTRIC TUNING AND AUTOMATIC RECORD CHANGER



*Model U-30*

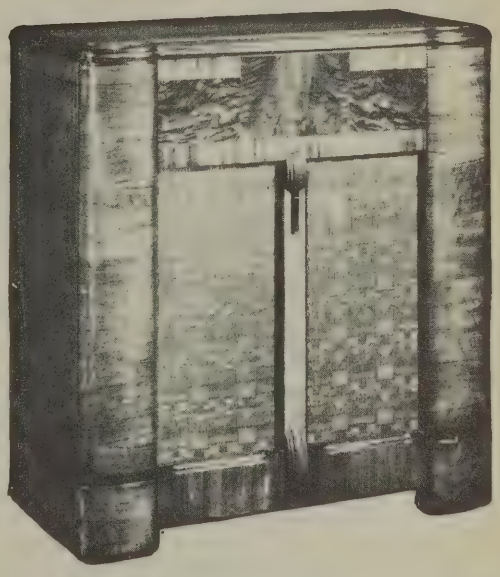


*Model U-129*



*Model U-126 Manual Victrola*

*Model U-128 Automatic Victrola*



*Model 910KG*

**RCA Victor Master Antenna Kit.**—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

**Noise-Reducing Adjustment.**—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C5, which is mounted behind the antenna terminal board, to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C5 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

**This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer C5 should be screwed all the way down.**

**Other Antennas.**—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

## MODELS U-126, U-128

### Dial Drive Cord Tension:

Additional tension is required on the drive cord when slippage or irregular tuning action is experienced on these models. The proper remedy is to fasten a spring Stock No. 31418 to the end of the cord which is normally fixed solid to the drum, and anchor its other end to the same lug occupied by the other No. 31418 spring. Refer to service note dial drive illustrations.

## MODEL 910KG

### Dial Light Diffusion Screen:

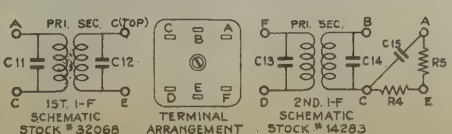
Where warpage of the light diffusion screen tends to obstruct movement of the dial pointer, it is usually possible to bend the pointer outward so that clearance is obtained. It is also possible to reduce the warpage by leaving the set in a reasonably dry place for several days. Should replacement of the screen be necessary, it may be ordered as **Stock No. 32083**—Dial Color Screen and Frame Assembled, less pointer carriage and rods. This part supersedes Stock No. 31306.

## MODELS U-126, U-128, 910KG 911K

### I. F. Transformer Modification:

Later production instruments include I-F transformers having circuit and connection arrangements as shown. These transformers have a bakelite top closure as contrasted to the original completely closed metal shield. The 1st I-F is stamped **No. 76456-8** and the 2nd is stamped **76456-3**. For replacement purposes, these units are mechanically interchangeable with the original transformers. Connections are, however, different and details are provided in the accompanying diagram.

**Note.**—R-4, R-5 and C-15 (C18 in 911K) are included in the second I-F assembly, and must be removed from the external circuit.




**1ST I-F TRANS.**

A—To plate 1st detector
C—To +B high voltage
C (top)—To 6K7 I-F grid
E—To AVC circuit

**2ND I-F TRANS.**

F—To plate 6K7 I-F stage
D—To +B high voltage
B—To diode plate 2nd det.
E—To capacitor C-17 (C19 in 911K)
C—To R-3, 2.2 meg. resistor
A—To chassis ground

**Replacements**

| Stock No. | |
|---|---|
| 32068 | First I-F Transformer |
| 14283 | Second I-F Transformer |

**Components of No. 32068 and No. 14283**

| | |
|---|---|
| 14262 | Capacitor—109 mmfd. (C11-C12) |
| 12404 | Capacitor—120 mmfd. (C13 - C14) |
| 14712 | Capacitor—180 mmfd. (C15) (C18 in 911K) |
| 11398 | Resistor—220,000 ohms (R5) |
| 14284 | Resistor—22,000 ohms (R4) |

# ALIGNMENT PROCEDURE

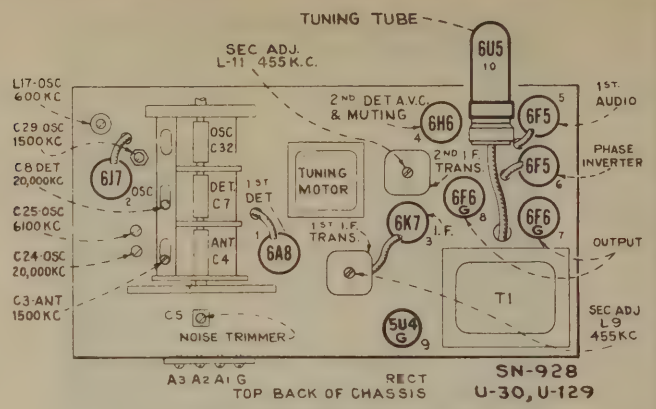
**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.




*Tube and Trimmer Locations*

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect the high side of test-oscillator to — | Tune test-oscillator to — | Range Selector | Set tuning gang to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| No. 1 | 6K7 I-F grid cap in series with .01 mfd. | 455 kc | "A" | Quiet point between 550-750 kc | L10, L11 (2nd I-F Transformer) |
| No. 2 | 6A8 Det. grid cap in series with .01 mfd. | 455 kc | "A" | | L8, L9 (1st I-F Transformer) |
| No. 3 | A2 Connect A1 to chassis. | 20 mc | "C" | 20 mc (147.5°) | C24 (osc.)* C8 (det.)† |
| No. 4 | A2, in series with 100 mmfd. Connect A3 to chassis. | 6,100 kc | "B" | 6,100 kc (145.5°) | C25 (osc.)** |
| No. 5 | A2, in series with 100 mmfd. Connect A3 to chassis. | 1,500 kc | "A" | 1,500 kc (151.5°) | C29 (osc.) C3 (ant.) |
| No. 6 | A2, in series with 100 mmfd. Connect A3 to chassis. | 600 kc | "A" | 600 kc (29.5°) | L17 (osc.) |
| No. 7 | A2, in series with 100 mmfd. Connect A3 to chassis. | 1,500 kc | "A" | 1,500 kc (151.5°) | C29 (osc.) |

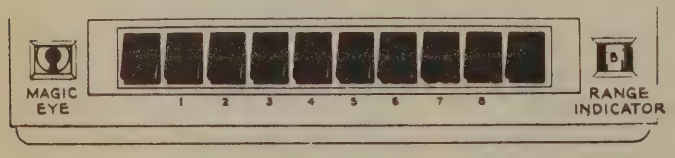
* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 141.5° (19,090 kc), at which point a weaker signal should be received.

** Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used by turning to 124° (5,190 kc), at which point a weaker signal should be received.

† Rock gang condenser and use maximum capacity peak if two peaks can be obtained with C8.

# ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.

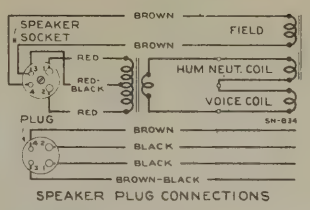


*Location of Controls*

The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

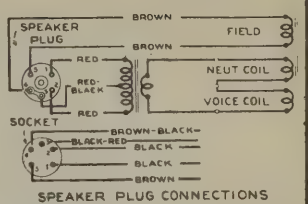
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move adjusting pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.

**Precautionary Lead Dress.** — (1) The lead from the left pilot light should be kept behind the bulb and toward the "Magic Eye," to keep it away from the 6F5 grid cap, (2) leads from mica trimmers to coil should be kept away from the coil and other parts, (3) leads on oscillator coil which are an extended part of the coil winding should be as short as possible, (4) "C" band series capacitor C31 must have leads as short as possible, (5) all leads from antenna board to antenna coils should be dressed toward back apron, (6) the one lead of the line cord and the primary lead of the power transformer which run to the power switch should be twisted together, (7) shielding on leads to Victrola switch should be kept away from the switch terminals and jack.



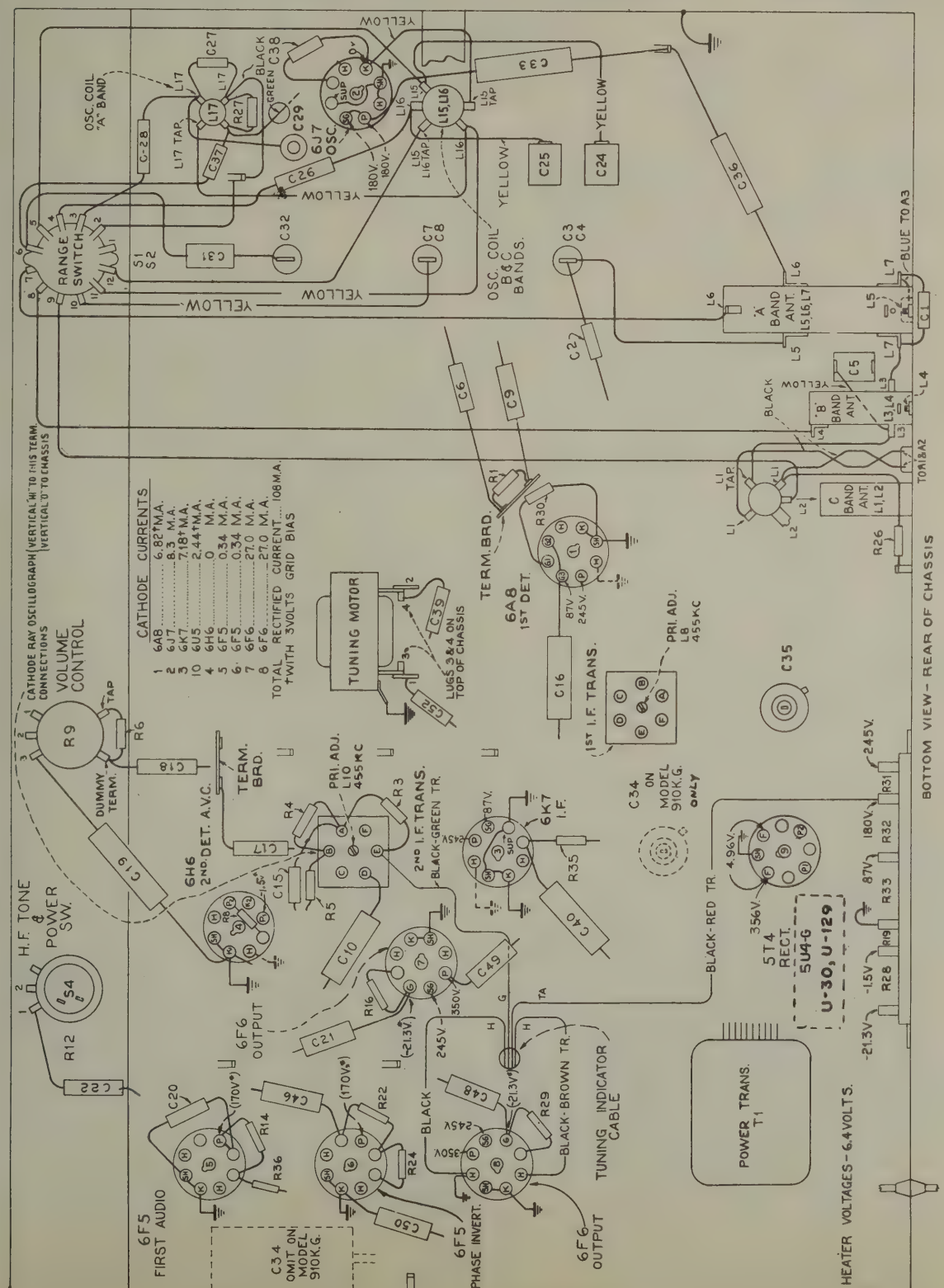

SPEAKER PLUG CONNECTIONS

Model 910KG.




SPEAKER PLUG CONNECTIONS

Models U-126, U-128. U-30, U-129

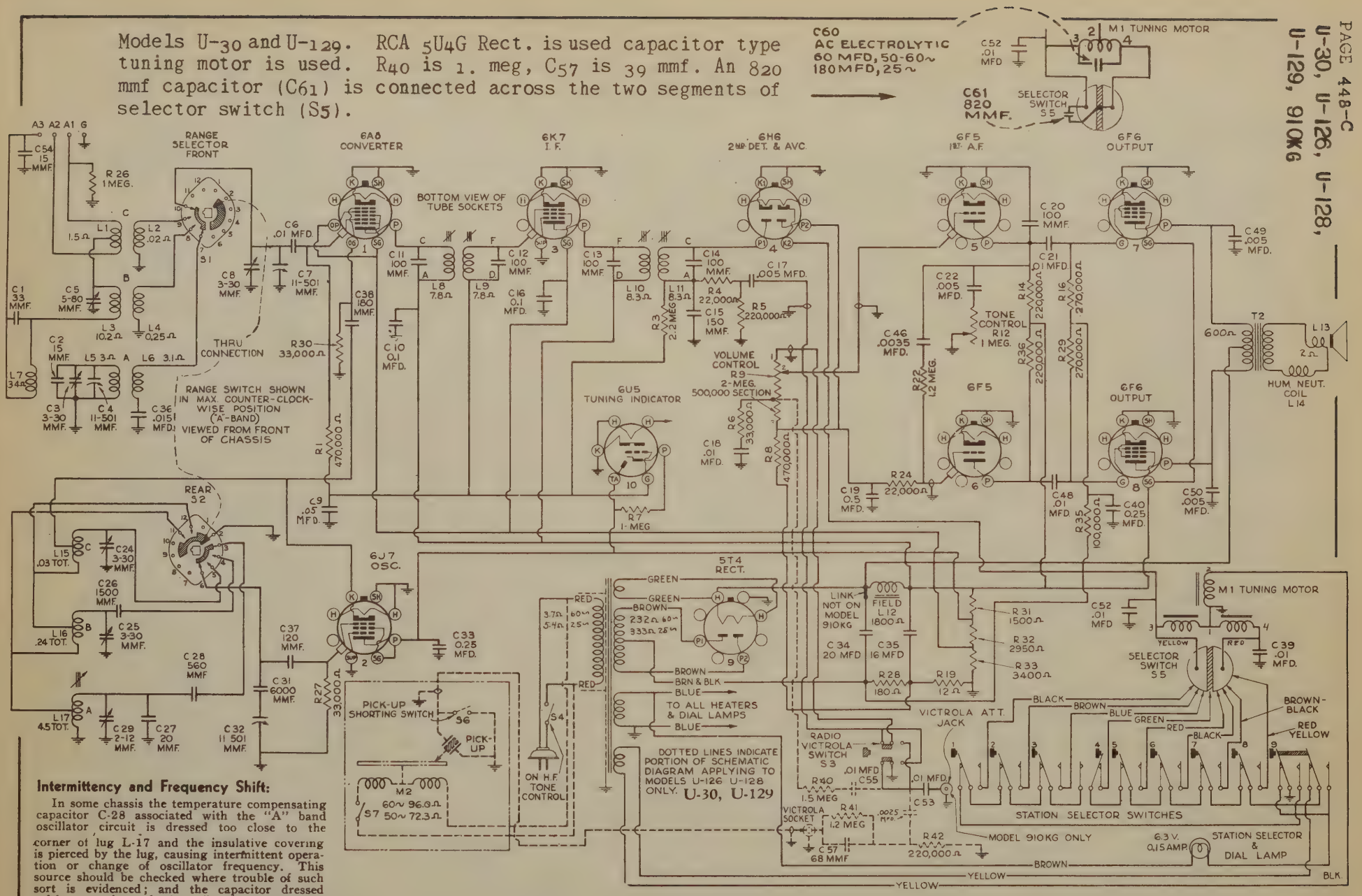



*R-F Wiring Diagram and Socket Voltages*

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

*NOTE: Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Models U-30 and U-129. RCA 5U4G Rect. is used capacitor type tuning motor is used. $R_{40}$ is 1. meg, $C_{57}$ is 39 mmf. An 820 mmf capacitor ($C_{61}$) is connected across the two segments of selector switch (S5).




### Intermittency and Frequency Shift:

In some chassis the temperature compensating capacitor C-28 associated with the "A" band oscillator circuit is dressed too close to the corner of lug L-17 and the insulative covering is pierced by the lug, causing intermittent operation or change of oscillator frequency. This source should be checked where trouble of such sort is evidenced; and the capacitor dressed safely away from the lug. It will be advisable to effect the same operation on any chassis being serviced for other reasons as a preventative measure.

In Model U-30, a 1.0 megohm resistor (R43) is connected from the Victrola socket to chassis.

## Turntable Mechanism Model U-126

The turntable is started by pushing to the rear the motor starting lever, which appears to the right of the turntable. The adjustment on the automatic motor stopping switch should be made so that the switch will snap to the "off" position when the needle in the pickup head is 1¾ inches away from the center of the turntable. The locking screw and details of the switch mechanism are shown in figure 14. The locking screw and nut may be reached, from underneath the motor board, or, by an open end wrench, under the turntable.

The turntable drive is a self-starting, variable-speed, governor-type, induction motor. The motor speed adjusting screw is located under the turntable, and may be adjusted by inserting a screwdriver thru one of the holes in the turntable, after the hole has been lined up with the screw.

In addition, an application of oil to the felt pad, which rubs against the governor disc, will insure smooth operation.

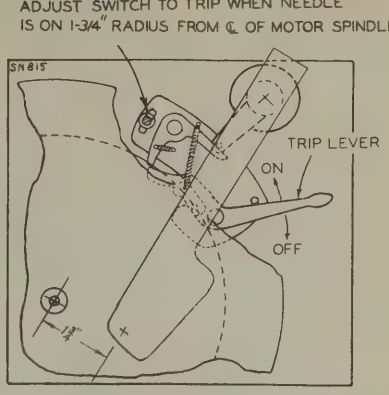



*Figure 14—Adjustment of Automatic Stop Switch*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **910KG, U-126, U-128** |
| | **RECEIVER ASSEMBLIES** |
| 31492 | Bearing—Variable condenser motor rotor adjustment bearing—less bracket and cup assembly (Models U-126 and U-128) |
| 31253 | Board—Antenna and ground terminal board (Model 910KG) |
| 31531 | Board—Antenna and ground terminal board (Models U-126 and U-128) |
| 31276 | Bracket—Band indicator mounting bracket complete—less indicator strip, cord, and tension spring |
| 31491 | Bracket—Bracket and bearing cup for variable condenser motor rotor adjustment (Models U-126 and U-128) |
| 31282 | Bracket—Magic Eye mounting bracket and holder |
| 12714 | Capacitor—Adjustable trimmer 2-12 mmfd. (C29) |
| 31292 | Capacitor—Dual adjustable trimmer 3-30 mmfd. each section (C24, C25) |
| 31252 | Capacitor—Adjustable trimmer 5-80 mmfd. (C5) |
| 12896 | Capacitor—15 mmfd. (C2, C54) |
| 12948 | Capacitor—33 mmfd. (C1) |
| 31432 | Capacitor—20 mmfd. (C27) |
| 13057 | Capacitor—68 mmfd. (C57) (Models U-126 and U-128) |
| 12720 | Capacitor—100 mmfd. (C20) |
| 31270 | Capacitor—100 mmfd. (C11, C12, C13, C14) |
| 12724 | Capacitor—120 mmfd. (C37, C38) |
| 12725 | Capacitor—150 mmfd. (C15) |
| 31433 | Capacitor—560 mmfd. (C28) |
| 31033 | Capacitor—1,500 mmfd. (C26) |
| 31405 | Capacitor—6,000 mmfd. (C31) |
| 5107 | Capacitor—.0025 mfd. (C53) (Models U-126, U-128) |
| 30303 | Capacitor—.0035 mfd. (C46) |
| 4838 | Capacitor—.005 mfd. (C17, C22, C49, C50) |
| 4858 | Capacitor—.01 mfd. (C21, C48) (Models U-126 and U-128) |
| 14393 | Capacitor—.01 mfd. (C6, C18, C21, C39, C48, C52, C53, C55) (C21, C48, C53, in Model 910KG only) (C55 in Models U-126 and U-128 only) |
| 11315 | Capacitor—.015 mfd. (C36) |
| 30882 | Capacitor—.05 mfd. (C9) |
| 4839 | Capacitor—0.1 mfd. (C10, C16) |
| 12484 | Capacitor—0.25 mfd. (C33) |
| 30965 | Capacitor—0.25 mfd. (C40) |
| 30867 | Capacitor—0.5 mfd. (C19) |
| 5212 | Capacitor—16 mfd. (C35) (Model 910KG) |
| 31496 | Capacitor—16 mfd. (C35) (Models U-126 and U-128) |
| 31495 | Capacitor—20 mfd. (C34) (Models U-126 and U-128) |
| 14531 | Capacitor—25 mfd. (C34) (Model 910KG) |
| 31237 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—50-60 cycle models only |
| 31544 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—25 cycle models only |
| 31293 | Coil—"A" band antenna coil (L5, L6, L7) |
| 31296 | Coil—"A" band oscillator coil (L17) |
| 31294 | Coil—"B" band antenna coil (L3, L4) |
| 31295 | Coil—"B" and "C" band oscillator coil (L15, L16) |
| 31297 | Coil—"C" band antenna coil (L1, L2) |
| 31290 | Condenser—3-gang variable condenser (C3, C4, C7, C8, C32) |
| 31231 | Contact—Contact tip for station-setting contact. |
| 31345 | Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip |
| 31344 | Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip |
| 31278 | Cord—Band indicator drive cord |
| 31281 | Cord—Indicator pointer drive cord |
| 31283 | Cord—Variable condenser drum drive cord |
| 31269 | Core—Adjustable core and stud for i-f transformers |
| 31260 | Core—Adjustable core and stud for "A" band oscillator coil |
| 31273 | Drum—Indicator drive cord drum |
| 31240 | Flywheel—Variable condenser drive motor flywheel |
| 31239 | Gear—Variable condenser knob shaft drive gear and hub |
| 31545 | Gear—Variable condenser intermediate drive gear and pinion gear—25 cycle models only |
| 31238 | Gear—Variable condenser intermediate drive gear and pinion gear—50-60 cycle models only |
| 31304 | Indicator—Band indicator strip (Model 910KG) |
| 31532 | Indicator—Band indicator strip (Models U-126 and U-128) |
| 11891 | Lamp—Dial, pilot, or compartment lamp, 6.3 V, 0.25 amp. |
| 31480 | Lamp—Electric tuning adjustment indicator lamp, 6.3 V, 0.15 amp |
| 31243 | Leather—Friction leather for flywheel |
| 31346 | Lock—Push button switch lock plate—comprising 10 contact locks in one strip |
| 31246 | Motor—Variable condenser drive motor (M1)—25 cycle models only |
| 31235 | Motor—Variable condenser drive motor (M1)—50-60 cycle models only |
| 31228 | Plate—Selector contact plate—less contacts |
| 31227 | Plate—Selector mounting plate—mounts on rear of variable condenser |
| 30868 | Plug—2-contact female plug for phono. motor cable (Models U-126 and U-128) |
| 5040 | Plug—4-contact female plug for speaker cable (Model 910KG) |
| 12493 | Plug—5-contact female plug for speaker cable (Models U-126 and U-128) |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 31271 | Pulley—Motor pulley |
| 31272 | Pulley—Range switch pulley |
| 31250 | Resistor—Voltage divider comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 180 ohm sections (R19, R28, R31, R32, R33) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R24) |
| 13998 | Resistor—22,000 ohms, ½ watt (R4) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R27, R30) |
| 12454 | Resistor—33,000 ohms, ½ watt (R6) |
| 14560 | Resistor—100,000 ohms, ½ watt (R35) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5, R36, R42) (R42 Models U-126 and U-128 only) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R14) |
| 11453 | Resistor—270,000 ohms, 1/10 watt (R16, R29) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R1) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12013 | Resisor—1 meg., 1/10 watt (R7, R26) |
| 30208 | Resistor—1.2 meg., ½ watt (R22, R41) (R41 Models U-126 and U-128 only) |
| 11981 | Resistor—1.5 meg., 1/10 watt (R40) (Models U-126 and U-128 only) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R3) |
| 14887 | Retainer—Indicator pointer drive cord pulley retainer |
| 31233 | Rotor—Selector rotor disc—mounts on rear of variable condenser shaft |

# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31241 | Screw—¼ x 20 headless, cone point set screw for flywheel |
| 4119 | Screw—No. 8-32 headless set screw for gear Stock No. 31239 |
| 14350 | Screw—No. 8-32 square head set screw for selector rotor disc |
| 4669 | Screw—No. 8-32 square head set screw for pulley Stock Nos. 31271 and 31272, and drum Stock No. 31273 |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31347 | Socket—Pickup socket and bracket |
| 31251 | Socket—Tube socket |
| 31365 | Socket—Tuning indicator lamp insulated socket |
| 31279 | Spring—Band indicator tension spring |
| 31232 | Spring—Contact tip spring for station-setting contact |
| 13638 | Spring—Indicator pointer drive cord tension spring |
| 31418 | Spring—Variable condenser drive cord tension spring |
| 12007 | Spring—Retaining spring for core Stock No. 31269 |
| 31230 | Spring—Station-setting contact body spring |
| 31262 | Spring—Tension spring for core Stock No. 31260 |
| 31242 | Spring—Tension spring for flywheel |
| 31970 | Spring—Tension spring for push button switch latch bar |
| 31494 | Spring—Variable condenser motor rotor adjustment bearing spring for 25 cycle models only (Models U-126 and U-128 only) |
| 31493 | Spring—Variable condenser motor rotor adjustment bearing spring for 50-60 cycle models only (Models U-126 and U-128 only) |
| 31236 | Support—Variable condenser drive gear mounting support and studs assembly |
| 31245 | Support—Variable condenser motor mounting support and studs for 25 cycle models only (Model 910KG only) |
| 31490 | Support—Variable condenser motor mounting support and studs for 25 cycle models only (Models U-126 and U-128 only) |
| 31244 | Support—Variable condenser motor mounting support and studs for 50-60 cycle models only (Model 910KG only) |
| 31489 | Support—Variable condenser motor mounting support and studs for 50-60 cycle models only (Models U-126 and U-128 only) |
| 31360 | Switch—Pickup switch for mounting on push button switch assembly (S3) |
| 31291 | Switch—Range switch (S1, S2) |
| 31248 | Tone Control — H.f. tone control and power switch (R12, S4) |
| 31267 | Transformer—First i-f transformer (L8, L9, C11, C12) |
| 31268 | Transformer—Second i-f transformer (L10, L11, C13, C14) |
| 31308 | Transformer—Power transformer 105-130-140/160-200 250 volts, 50-60 cycle (T1) |
| 31226 | Transformer—Power transformer 110 volts, 25-60 cycle (T1) |
| 31225 | Transformer—Power transformer 110 volts, 50-60 cycle (T1) |
| 31450 | Volume Control (R9) (Model 910KG only) |
| 31249 | Volume Control (R9) (Models U-126 and U-128 only) |
| | **PICKUP AND ARM ASSEMBLIES** Model U-126 |
| 31469 | Base—Pickup arm base and pivot shaft |
| 31156 | Crystal—Pickup crystal cartridge and needle screw |
| 31468 | Pickup and arm complete |
| 31160 | Screw—Pickup needle screw |
| 31161 | Shaft—Pickup pivot arm and shaft assembly |
| | **MOTOR ASSEMBLIES** Models U-126, |
| 31448 | Motor—105-125 volts, 25 cycle (M2) |
| 31163 | Motor—105-125 volts, 50-60 cycle (M2) |
| 31157 | Motor—105-125 volts, 60 cycle (M2) |
| 30868 | Plug—2-contact female plug for motor leads |
| 30870 | Plug—2-contact male plug for motor power cable |
| 31447 | Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only |
| 31158 | Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only |

MODELS U-30, U-128, U-128. REFER TO RP-132 FOR AUTOMATIC RECORD CHANGER REPLACEMENT PARTS

| STOCK No | DESCRIPTION |
|---|---|
| | **Additional Replacement Parts:** |
| | Stock No. |
| 32083 | Screen—Dial color screen and frame —less pointer, carriage, and rods |
| 31312 | Switch—Station selector push-button switch and bracket complete |
| | **MOTORBOARD ASSEMBLIES** Model U-126 |
| 31536 | Coupling—Flexible motor coupling complete |
| 9848 | Cup—Used needle cup and lid complete |
| 31465 | Mounting—Pickup arm base rubber mounting |
| 31535 | Pin—Drive pin to fasten flexible coupling to turntable shaft |
| 30870 | Plug—2-contact male plug for automatic switch leads |
| 14195 | Screw—Set screw for flexible coupling |
| 30100 | Springs—1 set of springs for automatic switch |
| 31155 | Spring—Used needle cup cover tension spring |
| 31147 | Strip—Complete set of rubber strips for flexible couplings |
| 31534 | Switch—Automatic switch and lever complete |
| 31467 | Switch—Switch only for automatic switch (S7) |
| 31533 | Turntable—Turntable with spindle shaft and nose complete |
| 31537 | Washers—Turntable bearing and shim washers |
| | **SPEAKER ASSEMBLIES** |
| 13866 | Cap—Dust cap for cone center |
| 11234 | Coil—Field coil (L12) |
| 11469 | Coil—Neutralizing coil (L14) |
| 31275 | Cone—Speaker cone and voice coil (L13) |
| 5039 | Plug—4-contact male plug for speaker (Model 910KG only) |
| 31539 | Plug—5-contact male plug for speaker (Models U-126 and U-128 only) |
| 31530 | Speaker complete (RL70H-2) (Model 910KG only) |
| 31538 | Speaker complete (RL70H-4) (Models U-126 and U-128 only) |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31358 | Button—Station selector push buttons |
| 13163 | Cap—Pilot lamp cap (Bulls Eye) (Models U-126 and U-128 only) |
| 31456 | Cover—8-protective covers for push button markers |
| 31540 | Cushion—Chassis mounting cushion and screw assemblies—sufficient for one chassis (Models U-126 and U-128 only) |
| 31541 | Cushion—Motor plate mounting cushion and clamp assembly—sufficient for one instrument (Models U-126 and U-128 only) |
| 31451 | Dial—Station selector dial scale and crystal |
| 31356 | Escutcheon—Tuning dial escutcheon—less dial and buttons (Model 910KG only) |
| 31361 | Escutcheon—Tuning dial escutcheon—less dial and buttons (Models U-126 and U-128 only) |
| 30698 | Hinge—Cabinet lid hinge (Models U-126 and U-128 only) |
| 31305 | Indicator — Station selector indicator pointer (Model 910KG only) |
| 31542 | Indicator — Station selector indicator pointer (Models U-126 and U-128 only) |
| 31355 | Knob—Station selector, volume control, tone control, or range switch knob |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31457 | Marker—"Record Player" push button marker |
| 31589 | Marker—Station call letter push button markers |
| 31760 | Screen — Compartment lamp screen (Models U-126 and U-128 only) |
| 11210 | Screw—Chassis mounting screws and washers —(4 required) (Model 910KG only) |
| 14270 | Spring—Retaining spring for knob Stock No. 31355 |
| 31470 | Suspension—Motor board suspension springs, screw, and lockwasher (4 required) (Models U-126 and U-128 only) |
| 11831 | Support—Cabinet lid support (Models U-126 and U-128 only) |

## MODELS U-30, U-129

**CHASSIS ASSEMBLIES**
(RC-335K and RC-335KR)

| | |
|---|---|
| 31531 | Board—Antenna and ground terminal board |
| 32232 | Body—Comprising one plunger body and one body spring |
| 31276 | Bracket—Band indicator mounting bracket complete—less indicator strip, cord, and tension spring |
| 31282 | Bracket—Magic Eye mounting bracket and holder |
| 32090 | Bracket—Motor mounting bracket and studs |
| 12714 | Capacitor—Adjustable trimmer, 2-12 mmfd. (C29) |

# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31292 | Capacitor—Dual adjustable trimmer, 3-30 mmfd. each section (C24, C25) |
| 31252 | Capacitor—Adjustable trimmer, 5-80 mmfd. (C5) |
| 12896 | Capacitor—15 mmfd. (C2, C54) |
| 12948 | Capacitor—33 mmfd. (C1) |
| 31432 | Capacitor—20 mmfd. (C27) |
| 13545 | Capacitor—39 mmfd. (C57) |
| 12720 | Capacitor—100 mmfd. (C20) |
| 31270 | Capacitor—100 mmfd. (C11, C12, C13, C14) |
| 12724 | Capacitor—120 mmfd. (C37, C38) |
| 12725 | Capacitor—150 mmfd. (C15) |
| 31433 | Capacitor—560 mmfd. (C28) |
| 31033 | Capacitor—1,500 mmfd. (C26) |
| 31405 | Capacitor—6,000 mmfd. (C31) |
| 5107 | Capacitor—.0025 mfd. (C53) |
| 30303 | Capacitor—.0035 mfd. (C46) |
| 4838 | Capacitor—.005 mfd. (C17, C22, C49, C50) |
| 4858 | Capacitor—.01 mfd. (C21, C48) |
| 14393 | Capacitor—.01 mfd. (C6, C18, C39, C52) |
| 11315 | Capacitor—.015 mfd. (C36) |
| 30882 | Capacitor—.05 mfd. (C9) |
| 4839 | Capacitor—0.1 mfd. (C10, C16) |
| 12484 | Capacitor—0.25 mfd. (C33) |
| 30965 | Capacitor—0.25 mfd. (C40) |
| 30867 | Capacitor—0.5 mfd. (C19) |
| 31496 | Capacitor—16 mfd. (C35) |
| 31495 | Capacitor—20 mfd. (C34) |
| 32088 | Capacitor—60 mfd., a-c electrolytic, 40 V. (50-60 cycle only) |
| 32435 | Capacitor—180 mfd., a-c electrolytic, 40 V. (25 cycle only) |
| 31293 | Coil—"A" band antenna coil (L5, L6, L7) |
| 31296 | Coil—"A" band oscillator coil (L17) |
| 31294 | Coil—"B" band antenna coil (L3, L4) |
| 31295 | Coil—"B" and "C" band oscillator coil (L15, L16) |
| 31297 | Coil—"C" band antenna coil (L1, L2) |
| 31290 | Condenser—3-gang variable condenser (C3, C4, C7, C8, C32) |
| 31231 | Contact—Contact tip for station-setting contact |
| 31345 | Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip |
| 31344 | Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip |
| 31278 | Cord—Band indicator drive cord |
| 32635 | Cord—Indicator pointer drive cord |
| 32634 | Cord—Variable condenser drum drive cord |
| 31269 | Core—Adjustable core and stud for i-f transformers |
| 31260 | Core—Adjustable core and stud for "A" band oscillator coil |
| 32093 | Damper — Flywheel damper — less mounting washers for rear end of tuning motor shaft (50-60 cycle motors only) |
| 32096 | Disc—Friction disc and pinion gear |
| 32091 | Drive—Drive gear assembly — comprising friction disc and pinion gear, drive gear, and knob shaft, assembled on gear-mounting bracket |
| 31273 | Drum—Indicator drive cord drum |
| 31239 | Gear—Knob shaft drive gear and hub |
| 31545 | Gear—Variable condenser intermediate drive gear and pinion gear—25 cycle models only |
| 31532 | Indicator—Band indicator strip |
| 11891 | Lamp—Dial, pilot, or compartment lamp, 6.3 V, 0.25 amp. |
| 31480 | Lamp—Electric tuning adjustment indicator lamp, 6.3 V, 0.15 amp. |
| 31346 | Lock—Push button switch lock plate—comprising 10 contact locks in one strip |
| 32095 | Motor—Electric tuning motor, 60 mfd. capacitor, friction roller, and damper, assembled (50-60 cycle only) |
| 32434 | Motor—Electric tuning motor, 180 mfd. capacitor, and friction roller (25 cycle only) |
| 31228 | Plate—Selector contact plate—less contacts |
| 31227 | Plate—Selector mounting plate—mounts on rear of variable condenser |
| 30868 | Plug—2-contact female plug for phono. motor cable |
| 12493 | Plug—5-contact female plug for speaker cable |
| 32232 | Plunger—Station setting contact tip |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 31271 | Pulley—Motor pulley |
| 31272 | Pulley—Range switch pulley |
| 31250 | Resistor—Voltage divider—comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 180 ohm sections (R19, R28, R31, R32, R33) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R24) |
| 13998 | Resistor—22,000 ohms, ½ watt (R4) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R27, R30) |
| 12454 | Resistor—33,000 ohms, ½ watt (R6) |
| 14560 | Resistor—100,000 ohms, ½ watt (R35) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5, R36) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R14) |
| 11453 | Resistor—270,000 ohms, 1/10 watt (R16, R29) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R1) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12013 | Resistor—1 meg., 1/10 watt (R7, R26, R40) |
| 13730 | Resistor—1 meg., ½ watt (R43) (U-30 only) |
| 30208 | Resistor—1.2 meg., ½ watt (R41) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R3) |
| 14887 | Retainer—Indicator pointer drive cord pulley retainer |
| 32086 | Roller—Rubber friction roller for front end of motor (attach to motor shaft with shellac) |
| 31233 | Rotor—Selector rotor disc—mounts on rear of variable condenser shaft |
| 4119 | Screw—No. 8-32 headless set screw for gear, Stock No. 31239 |
| 14350 | Screw—No. 8-32 square head set screw for selector rotor disc |
| 4669 | Screw—No. 8-32 square head set screw for pulley, Stock Nos. 31271 and 31272, and drum, Stock No. 31273 |
| 31681 | Shaft—Dial drive knob shaft |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31347 | Socket—Pickup socket and bracket |
| 31251 | Socket—Tube socket |
| 31365 | Socket—Tuning indicator lamp insulated socket |
| 31279 | Spring—Band indicator tension spring |
| 31232 | Spring—Contact tip spring for station-setting contact |
| 13638 | Spring—Indicator pointer drive cord tension spring |
| 31418 | Spring—Variable condenser drive cord tension spring |
| 12007 | Spring—Retaining spring for core, Stock No. 31269 |
| 31230 | Spring—Station-setting contact body spring |
| 31262 | Spring—Tension spring for core, Stock No. 31260 |
| 31970 | Spring—Tension spring for push button switch latch bar |
| 31236 | Support—Variable condenser drive gear mounting support and studs assembly |
| 31360 | Switch—Pickup switch for mounting on push button switch assembly (S3) |
| 31291 | Switch—Range switch (S1, S2) |
| 31312 | Switch—Station selector push button switch and bracket complete |
| 31248 | Tone Control — H.f. tone control and power switch (R12, S4) |
| 31267 | Transformer—First i-f transformer (L8, L9, C11, C12) |
| 31268 | Transformer—Second i-f transformer (L10, L11, C13, C14) |
| 31308 | Transformer—Power transformer, 105/130-140/160-200 250 volts, 50-60 cycle (T1) |
| 31226 | Transformer—Power transformer, 110 volts, 25-60 cycle (T1) |
| 31225 | Transformer—Power transformer, 110 volts, 50-60 cycle (T1) |
| 31249 | Volume Control (R9) |
| 32231 | Washer—Comprising 1 metal washer, 2 fibre washers, and 1 solder lug or retainer for station selector plunger |
| 32094 | Washers—One set of washers for mounting damper on 50-60 cycle motors only—comprising 2 "C" washers, 1 sprng washer, and 1 flat washer |

## SPEAKER ASSEMBLIES (RL-70H-4)

Same as for U-126, U-128

## MISCELLANEOUS ASSEMBLIES

| | |
|---|---|
| 31358 | Button—Station selector push button |
| 13103 | Cap—Pilot lamp cap |
| 31456 | Cover—8 protective covers for push button markers |
| 31540 | Cushion—Chassis mounting cushion and screw assemblies—sufficient for one chassis |
| 31541 | Cushion—Motor plate mounting cushion and clamp assembly—sufficient for one instrument |
| 31451 | Dial—Station selector dial scale and crystal |
| 31361 | Escutcheon—Tuning dial escutcheon, less dial and push buttons |
| 30698 | Hinge—Cabinet lid hinge |
| 31542 | Indicator—Station selector indicator pointer and carriage |
| 31355 | Knob—Station selector, volume control, tone control, or range switch knob |
| 31478 | Lid Support—Cabinet lid support |
| 31589 | Marker—Station call letter push button markers |
| 31457 | Marker—"Victrola" push button marker |
| 31458 | Marker—"Dial Tuning" push button marker |
| 32083 | Screen—Dial color screen |
| 14270 | Spring—Retaining spring for knob, Stock No. 31355 |
| 31470 | Suspension—Motorboard suspension spring, screw, and lockwasher, 4 required |

## ANTENNA ASSEMBLIES

| | |
|---|---|
| 31426 | Counterpoise Line—Additional length 60 ft. long |
| 12426 | Insulator—Strain and counterpoise insulator |
| 9816 | Transmission Line—Additional length 60 ft. long |

# MODEL Q33

## Chassis No. RC-539

## Seven-Tube and Magic Eye, Five-Band, Superheterodyne

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" Band)..540-1,720 kc (556-174 m)
Medium Wave ("B" Band).....3.0-9.5 mc (100-31.6 m)
31 Meter Spread Band.....9.5-11.7 mc (31.6-25.6 m)
25 Meter Spread Band.....11.7-15.1 mc (25.6-19.9 m)
19-13 Meter Spread Band.....15.1-22.5 mc (19.9-13.3 m)

INTERMEDIATE FREQUENCY..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SK7..... R-F Amplifier
(2) RCA-6SA7.....1st Detector-Oscillator
(3) RCA-6SK7..... I-F Amplifier
(4) RCA-6U5..... Tuning Indicator
(5) RCA-6SQ7..... 2nd Det. A-F Amplifier AVC
(6) RCA-6AD7G..... Phase Inverter & Power Output
(7) RCA-6F6G..... Power Output
(8) RCA-5Y3G..... Rectifier

PILOT LAMPS.....2—Type 44, 6.3 volts, 0.25 amps.

POWER SUPPLY RATINGS

105-125 volts, 50-60 cycles..... 80 watts
105-125 volts, 25-60 cycles..... 80 watts
100-130, 140-160, 200-250 volts, 50-60 cycles..... 80 watts

POWER OUTPUT

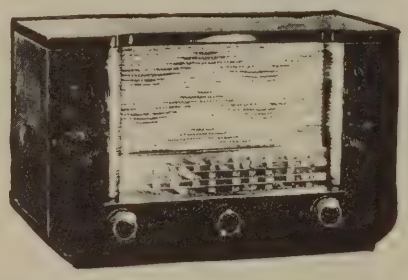
Undistorted..... 3 watts
Maximum..... 3.5 watts

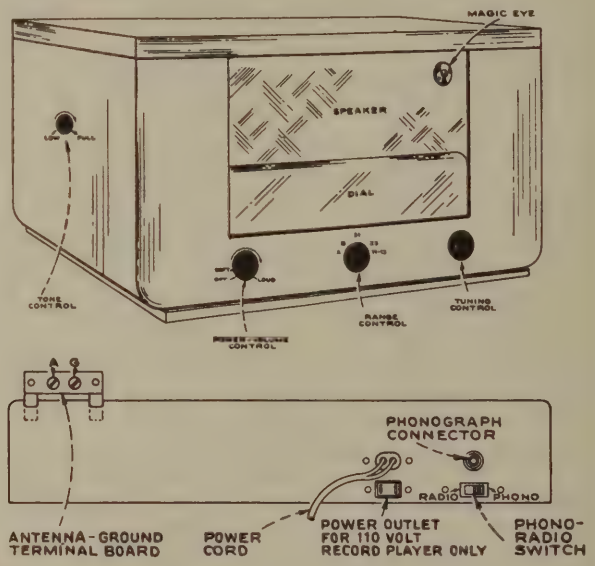
LOUDSPEAKER

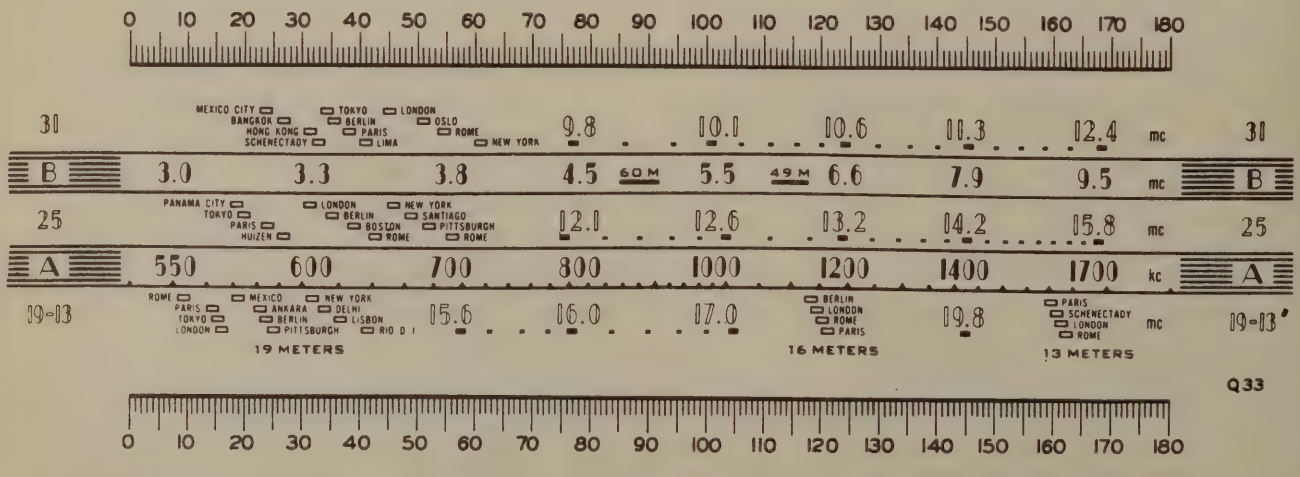
Type..... 8-inch electrodynamic
V.C. Impedance..... 2.2 ohms at 400 cycles
Indentification Number..... RL-63K5

| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS (inches) | 13 5/8 | 21½ | 10 7/16 |
| Chassis Base Dimensions (inches) | 2 7/8 | 15½ | 6½ |

Overall Chassis Height.....7 13/16 inches
Weight .....34½ lbs. (net).....42½ lbs. (gross)
Tuning Drive Ratio..... 20 to 1

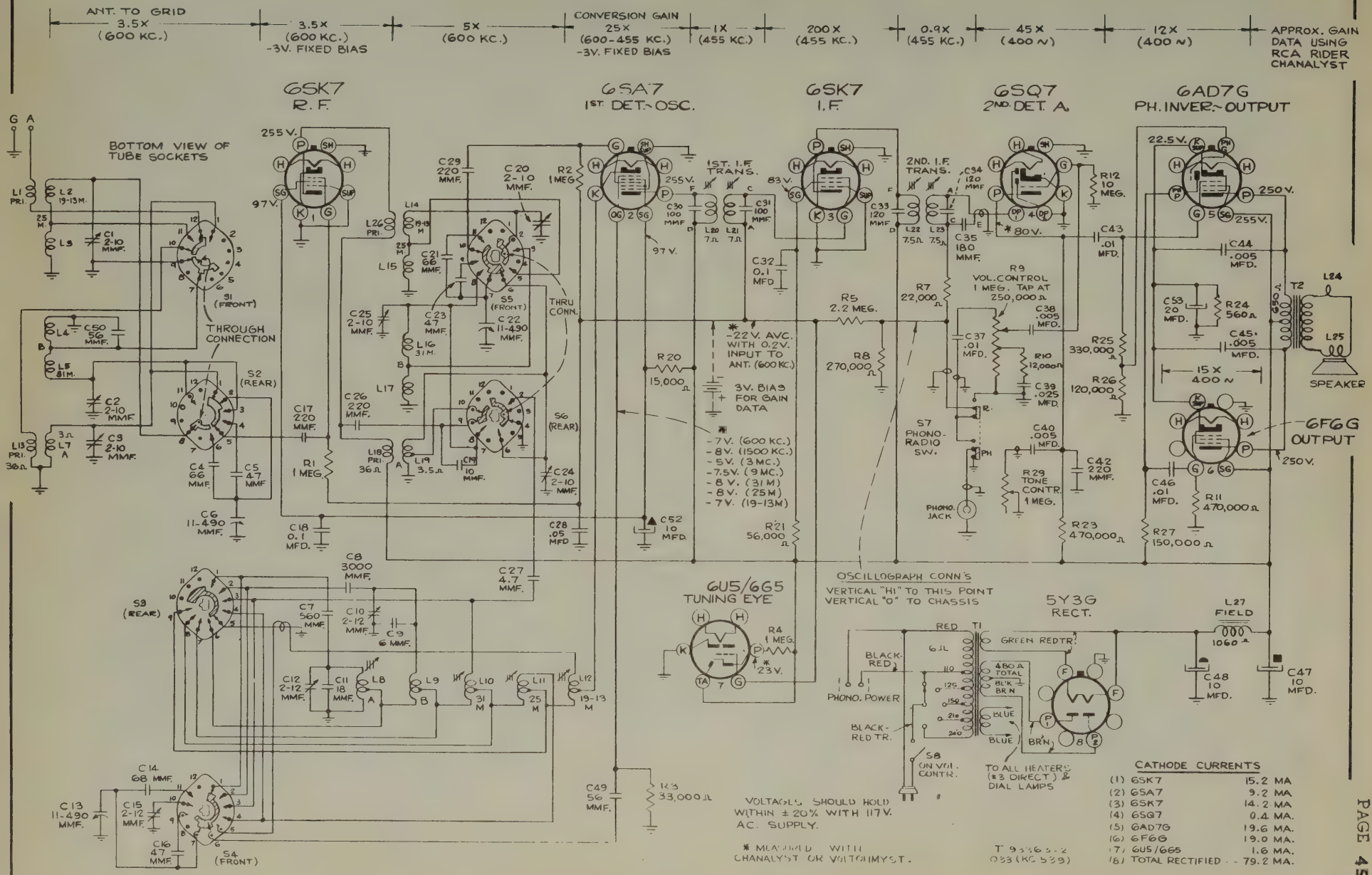






0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
31
MEXICO CITY BANGKOK HONG KONG SCHENECTADY TOKYO BERLIN PARIS LIMA LONDON OSLO ROME NEW YORK
9.8 10.1 10.6 11.3 12.4 mc
B
3.0 3.3 3.8 4.5 60 M 5.5 49 M 6.6 7.9 9.5 mc
25
PANAMA CITY TOKYO PARIS HUIZEN LONDON BERLIN BOSTON ROME NEW YORK SANTIAGO PITTSBURGH ROME
12.1 12.6 13.2 14.2 15.8 mc
A
550 600 700 800 1000 1200 1400 1700 kc
19-13
ROME PARIS TOKYO LONDON MEXICO ANKARA BERLIN PITTSBURGH NEW YORK DELHI LISBON RIO D I
15.6 16.0 17.0 19.8 mc
19 METERS
16 METERS
BERLIN LONDON ROME PARIS
PARIS SCHENECTADY LONDON ROME
13 METERS
Q33

*Reduced Reproduction of Receiver Dial and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 30° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."


ANT. TO GRID
3.5X
(600 KC.)
3.5X
(600 KC.)
-3V. FIXED BIAS
5X
(600 KC.)
CONVERSION GAIN
25X
(600-455 KC.)
-3V. FIXED BIAS
1X
(455 KC.)
200X
(455 KC.)
0.9X
(455 KC.)
45X
(400 ~)
12X
(400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6SK7
R.F.
6SA7
1ST. DET.-OSC.
6SK7
I.F.
6SQ7
2ND. DET. A.
6AD7G
PH. INVER.-OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
THROUGH CONNECTION
1ST. I.F. TRANS.
2ND. I.F. TRANS.
-22 V. AVC. WITH 0.2V. INPUT TO ANT. (600 KC.)
3V. BIAS FOR GAIN DATA
-7V. (600 KC.)
-8V. (1500 KC.)
-5V. (3 MC.)
-7.5V. (9 MC.)
-8 V. (31 M)
-8V. (25M)
-7V. (19-13M)
R9 VOL. CONTROL 1 MEG. TAP AT 250,000Ω
S7 PHONO-RADIO SW.
PHONO JACK
15 X 400 ~
SPEAKER
6F6G OUTPUT
6U5/6G5 TUNING EYE
OSCILLOGRAPH CONN'S
VERTICAL "HI" TO THIS POINT
VERTICAL "O" TO CHASSIS
5Y3G RECT.
PHONO. POWER
TO ALL HEATERS (#3 DIRECT) & DIAL LAMPS
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117V. A.C. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
T 9336-2
033 (KC 539)
CATHODE CURRENTS
(1) 6SK7 15.2 MA
(2) 6SA7 9.2 MA.
(3) 6SK7 14.2 MA.
(4) 6SQ7 0.4 MA.
(5) 6AD7G 19.6 MA.
(6) 6F6G 19.0 MA.
(7) 6U5/6G5 1.6 MA.
(8) TOTAL RECTIFIED - - 79.2 MA.

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

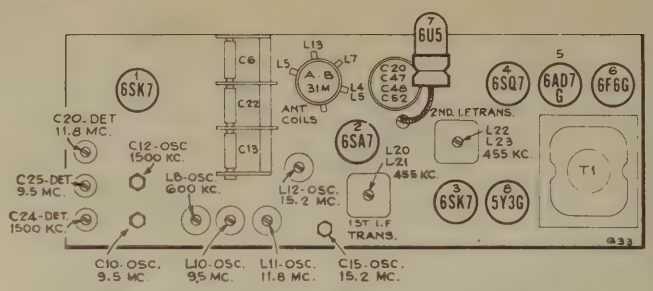
**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.

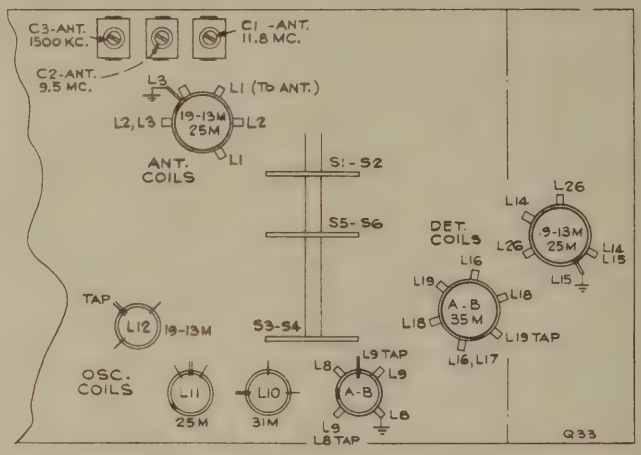
**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."




*Tube and Trimmer Locations (Top View)*




*Coil and Trimmer Locations (Bottom View)*

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range Switch | Turn Radio Dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" band | Quiet point 600 kc end of dial | L23-L22 2nd I-F transformer |
| 2 | 6SA7 1st det. grid in series with .01 mfd. | | | | L21-L20 1st I-F transformer |
| 3 | Antenna terminal in series with 300 ohms | 11.8 mc | 25 meter band | 11.8 mc (41.5°) | L11 (osc.) C1 (ant.) C20 (det.) |
| 4 | | 15.2 mc | | 15.2 mc (161.7°) | C15 (osc.)*† |
| 5 | Repeat steps 3 and 4 until aligned. | | | | |
| 6 | Antenna terminal in series with 300 ohms | 15.2 mc | 19-13 meter band | 15.2 mc (24°) | L12 (osc.)** |
| 7 | | 9.5 mc | 31 meter band | 9.5 mc (23.8°) | L10 (osc.)** C2 (ant.) C25 (det.)*** |
| 8 | | 9.5 mc | "B" band | 9.5 mc (168.5°) | C10 (osc.)* |
| 9 | Antenna terminal in series with 200 mmfd. | 1,500 kc | "A" band | 1,500 kc (153°) | C12 (osc.) C3 (ant.) C24 (det.) |
| 10 | | 600 kc | | 600 kc (30.5°) | L8 (osc.) Rock in |
| 11 | Repeat steps 9 and 10. | | | | |

* Use minimum capacity peak if two can be obtained.

** Peak at minimum plunger position if two peaks can be obtained.

*** Use maximum capacity peak if two peaks can be obtained.

† Check image to determine that C15 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

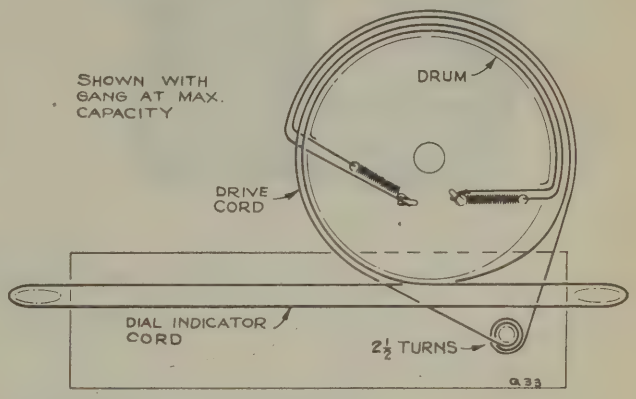
NOTE: Oscillator tracks above signals on all bands.

**Precautionary Lead Dress:**

1. Dress green leads from antenna and R-F gang sections away from all metal including chassis shield plates. The spaghetti covered braid in the antenna section should be at least ¼ inch away from gang. .
2. Black and brown twisted filament leads between 6SA7 and 6SK7-RF must run along front side of the shield plate.
3. Dress toothpick capacitors and switch leads away from and edge on to shield plates.
4. Closely twist ground lead about 2nd I-F transformer diode lead and dress close to chassis.
5. Dress volume control-arm lead and capacitor close to front apron and away from output tubes by-pass capacitors.
6. 6SQ7 10 megohm grid resistor should have no lead length on the grid side.
7. Dress capacitor high side of volume control toward base and as far as possible from a-c switch.
8. Leads to converter socket should not impede flexible mounting.
9. Converter control grid: clear of any other leads, especially filament leads which must be at least ¼ inch away. The megohm grid leak must have its body as close to grid as possible.
10. Dress oscillator grid and control grid capacitors apart. Dress oscillator grid coupling condenser away from coil form and ¼ inch from any other parts.
11. 6AD7G plate to cathode capacitor must be flat against chassis.
12. Dress all filament and B+ leads close to chassis.

**Oscillation:**

Audio oscillation may be encountered if the receiver is switched to the phonograph position and the pickup is not plugged into the jack provided in the rear chassis apron.




## Replacement Parts

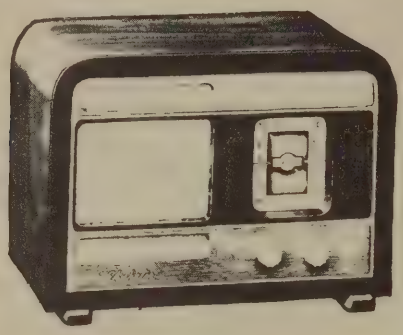
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-539)** |
| 34502 | Arm—Range switch actuating arm |
| 37092 | Calibrator—Printed chart for Stock No. 37090 drum |
| 12714 | Capacitor—Plunger type air-trimmer |
| 37059 | Capacitor—3 section mica trimmer 2.5 to 10 mmfd. each section |
| 33097 | Capacitor—4.7 mmfd. |
| 35646 | Capacitor—6 mmfd. |
| 13200 | Capacitor—10 mmfd., moulded |
| 31350 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 37329 | Capacitor—47 mmfd., silvered mica |
| 12723 | Capacitor—56 mmfd. |
| 36072 | Capacitor—66 mmfd. |
| 35645 | Capacitor—68 mmfd. |
| 30904 | Capacitor—100 mmfd., mica |
| 31813 | Capacitor—120 mmfd. |
| 36616 | Capacitor—220 mmfd., mica |
| 12694 | Capacitor—220 mmfd., moulded |
| 33760 | Capacitor—220 mmfd., silvered mica |
| 31433 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 33014 | Capacitor—Electrolytic comprising 3 sections of 10-10-10 mfd., and 1 section of 20 mfd. |
| 37093 | Coil—A-B band oscillator coil |
| 37055 | Coil—A-B and 31 meter band antenna coil |
| 37057 | Coil—A-B and 31 meter band R.F. coil |
| 35624 | 13 and 19 meter band oscillator coil |
| 37056 | Coil—13-19 and 25 meter band antenna coil |
| 37058 | Coil—13-19 and 25 meter band R.F. coil |
| 35625 | Coil—25 meter band oscillator coil |
| 35626 | Coil—31 meter band oscillator coil |
| 37086 | Condenser—3 gang variable tuning condenser |
| 36109 | Control—Tone control |
| 37087 | Control—Volume control and power switch |
| 32634 | Cord—Drive or pointer cord (approx. 50 in. lg.) |
| 37090 | Drum—Tuning condenser drum—less calibration chart |
| 37091 | Flywheel—Wheel and tuning shaft assembly |
| 37094 | Link—Link, arm and bushing assembly |
| 14028 | Nut—Clamping nut for Stock No. 12714 capacitor |
| 31817 | Plate—Cushion socket mounting plate |
| 35641 | Pulley—Drive cord pulley |
| 37089 | Pulley—Left hand dial cord pulley and bracket |
| 37921 | Crystal—"Magic Eye" crystal |
| 37922 | Indicator—Station selector indicator |
| 30716 | Clip—"Magic Eye" clip and thumb screw |
| 33438 | Screw—Thumb screw for "Magic Eye" clip |
| 37088 | Pulley—Right hand dial cord pulley and bracket |
| 36637 | Receptacle—AC power receptacle |
| 30735 | Resistor—560 ohms, 1 watt |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watts |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30493 | Resistor—150,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12013 | Resistor—1 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 37096 | Shaft—Indicator shaft |
| 37095 | Shaft—Range switch actuating shaft |
| 31251 | Socket—Eight prong tube socket |
| 35787 | Socket—Phono input socket |
| 31418 | Spring—Drive cord spring |
| 33491 | Switch—"Radio-Phono" switch |
| 37050 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer |
| 36615 | Transformer—Second I.F. transformer |
| 31734 | Transformer—105-120 volts, 25 cycle power transformer |
| 31735 | Transformer—105-125-150-210-240 volt, 50-60 cycle power transformer |
| 13638 | Spring—Dial cord tension spring |
| | **SPEAKER ASSEMBLIES (RL-63K5)** |
| 31825 | Cap—Cone center dust cap |
| 12079 | Coil—1,060 ohm field coil |
| 11469 | Coil—Hum neutralizing coil |
| 34615 | Cone—Cone and voice coil assembly |
| 5039 | Plug—4 prong male speaker plug |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37387 | Back—Finished back cover |
| 35392 | Decal—"RCA Victor" decal |
| 37281 | Dial—Station selector dial scale |
| 35652 | Knob—Range indicator knob |
| 35651 | Knob—Range switch knob |
| 35650 | Knob—Tone control knob |
| 35955 | Knob—Volume or tuning knob |
| 11891 | Lamp—6.3 volts, 0.25 amperes dial lamp |
| 5040 | Plug—4 contact female speaker cable plug |
| 12959 | Socket—6 contact female Magic Eye socket |
| 31364 | Socket—Pilot lamp socket |

# MODEL BT-40

Chassis No. RC-408

## Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver



*CAUTION. — Before attempting to install or replace batteries or tubes or to make any repairs or changes, be sure to turn the left hand knob fully to the left (counter-clockwise), to turn off the power.*

### Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

RCA TUBE COMPLEMENT

(1) RCA-1A7-G ..... 1st-Det.—Osc.
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-1C5-G ..... Output

BATTERIES REQUIRED

1 "A"—"B" Pack (Eveready No. 748 or equivalent).

CURRENT CONSUMPTION

"A," 0.24 ampere—"B," 9.0 milliampere•

POWER OUTPUT

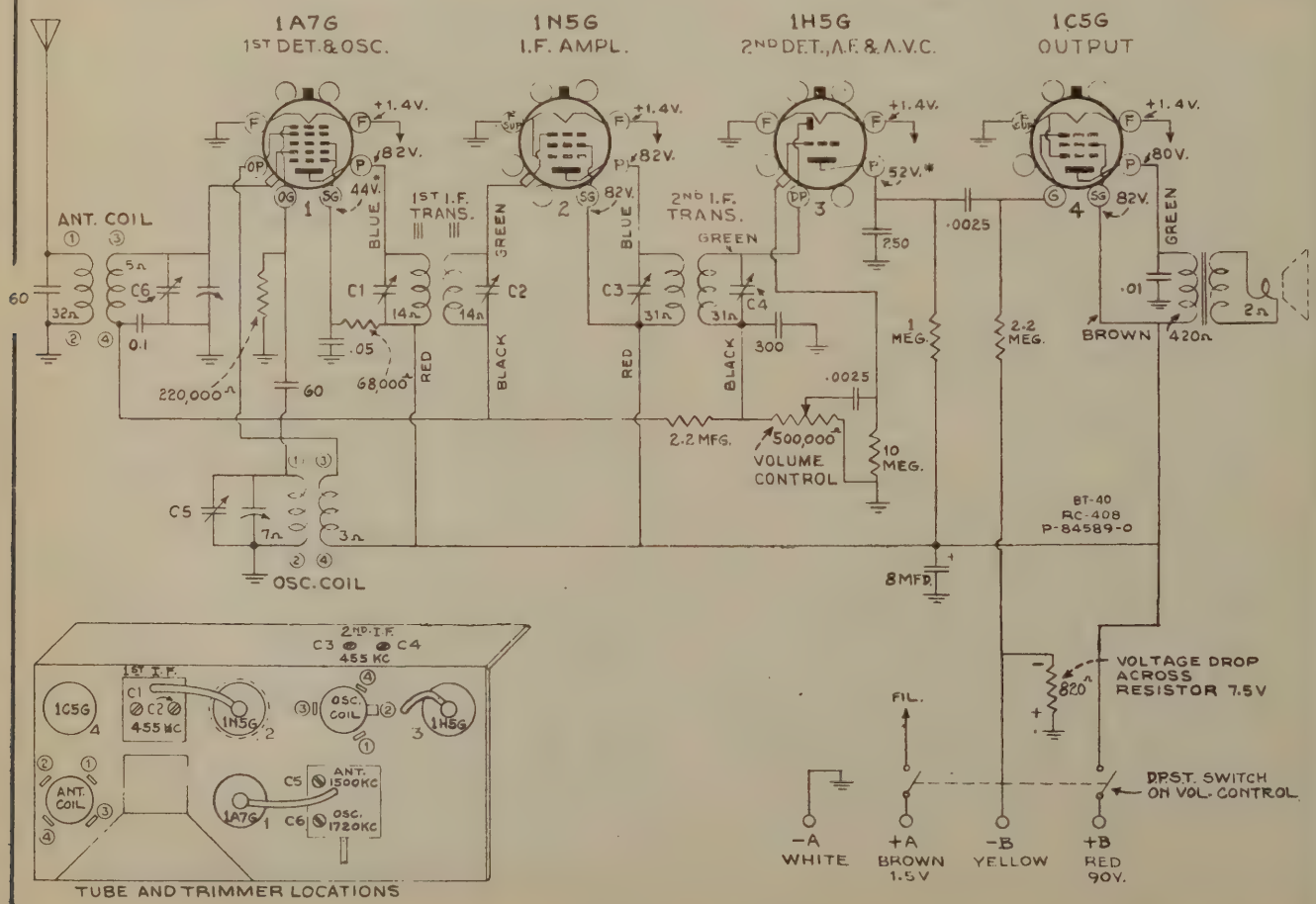
Undistorted ..... 0.10 watt
Maximum ..... 0.21 watt

LOUDSPEAKER

Type ..... 4-inch permanent-magnet dynamic
Voice-coil Impedance ..... 2 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) ..... | 6¼ | 9¼ | 4-11/16 |
| Chassis Base Dimensions (inches) ..... | 1¾ | 8¼ | 3¾ |

Over-all Chassis Height ..... 5¾ inches
Weight—Shipping weight ..... 6¼ pounds
Net weight ..... 4¾ pounds
Tuning Drive Ratio ..... 11 to 1




*Schematic Circuit Diagram*

## Alignment Procedure

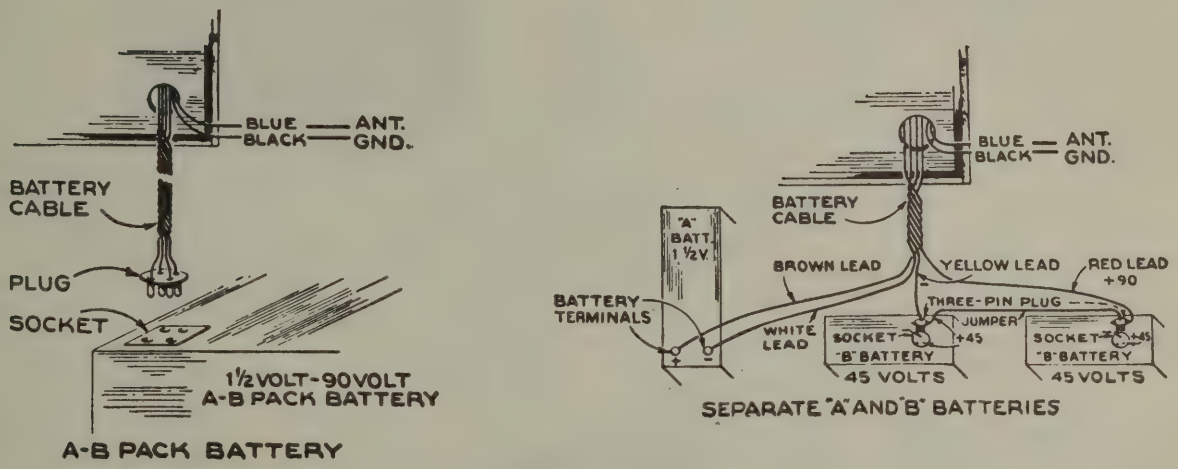
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

**Pre-setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1A7G 1st-Det. grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna lead (blue) in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C6 (antenna) |




*Installation of Batteries*

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| 11591 | Button—Plug button for chassis | | 14076 | Resistor—820 ohms, ½ watt | |
| 13057 | Capacitor—60 mmfd. | | 13715 | Resistor—68,000 ohms, ½ watt | |
| 12488 | Capacitor—250 mmfd. | | 12264 | Resistor—220,000 ohms, ½ watt | |
| 12952 | Capacitor—300 mmfd. | | 13730 | Resistor—1 meg., ½ watt | |
| 5107 | Capacitor—.0025 mfd. | | 12679 | Resistor—2.2 meg., ½ watt | |
| 4937 | Capacitor—.01 mfd. | | 13601 | Resistor—10 meg., ½ watt | |
| 32787 | Capacitor—.05 mfd. | | 33061 | Shaft—Tuning knob drive shaft | |
| 4839 | Capacitor—0.1 mfd. | | 32595 | Shield—Tube shield—less cap | |
| 32187 | Capacitor—Electrolytic, 8 mfd. | | 32537 | Socket—Tube socket | |
| 32572 | Coil—Antenna coil | | 33058 | Speaker complete (39128-1) | |
| 33055 | Coil—Oscillator coil | | 30585 | Spring—Drive cord tension spring | |
| 33060 | Condenser—2-gang tuning | | 32667 | Spring—Retaining spring for knobs or drive drum | |
| 32634 | Cord—Drive cord | | 33056 | Transformer—First i-f transformer | |
| 33310 | Dial—Glass dial scale | | 33057 | Transformer—Second i-f transformer | |
| 32946 | Drum—Variable condenser drive drum | | 33062 | Transformer—Output transformer | |
| 32571 | Knob—Tan volume or tuning knob | | 33059 | Volume control and switch | |
| 30550 | Plug—4-prong male plug for battery cable | | | | |

**Off-Center Cone:**

In many cases, an off-center original cone may be quickly centered by bending the support webs of the speaker housing in the required direction.

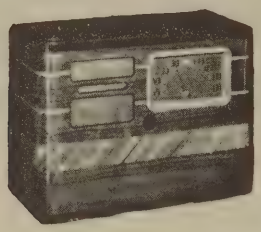
# MODELS BK-41 and BT-41

## Chassis No. RC-449

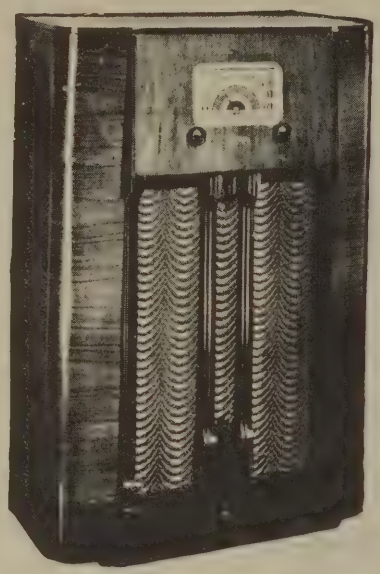
## Four-Tube, Single-Band, Battery-Operated Superheterodyne Receivers

## and

## Model CV-40 (RS-98) A-C Power Unit



*Model BT-41*



*Model BK-41*

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT
(1) RCA-1A7-G ..... 1st. Detector-Oscillator
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G ..... Second Detector A.V.C., and A-F
(4) RCA-1Q5GT ..... Power Output

CV-40
Rectifier ..... RCA-5U4-G
Plug-in Resistor ..... WW48, Stock No. 34563

POWER OUTPUT (Battery Operation)
Undistorted ..... 0.125 watt
Maximum ..... 0.300 watt

LOUDSPEAKER
Type ..... Permanent Magnet Dynamic
Diameter ..... BK41, 8 inches; BT41, 5 inches
Voice Coil Impedance BK41, 2.2 ohms; BT41, 3.0 ohms at 400 cycles

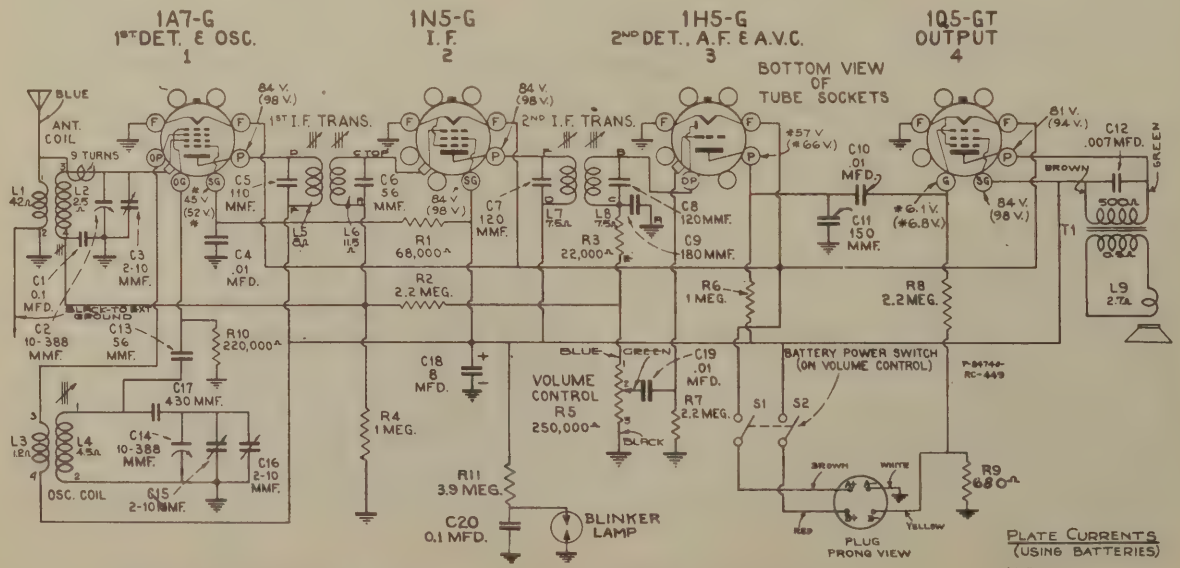
BATTERY REQUIRED
Combination 1½ volt-90 volt A-B Pack

CURRENT CONSUMPTION
"A" at 1.4 volts, 0.25 amp.
"B" at 90 volts, 9.4 ma.

A-C Operation

Use of power unit CV-40 with either Model BK41 or BT41 adapts that receiver for A-C operation.

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions, BK41 | 30 in. | 25½ in. | 12½ in. |
| Cabinet Dimensions, BT41 | 13 3/16 in. | 17⅝ in. | 7¾ in. |
| Chassis Base Dimensions | 2 in. | 9¾ in. | 5½ in. |
| Over-All Chassis Height | | | 6⅜ in. |
| Weight, BK41 | | 48 lbs. (shipping) | |
| Weight, BT41 | | 15 lbs. (shipping) | |
| Tuning Drive Ratio | | 8 to 1 | |




STARRED (*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.

VOLTAGES IN PARENTHESES ARE THOSE OBTAINED BY USING POWER SUPPLY CV-40.
WHEN BATTERIES ARE USED VOLTAGES NOT IN PARENTHESES APPLY.

PLATE CURRENTS (USING BATTERIES)

| | |
|---|---|
| 1A7G | |
| OSC. | 0.85 MA. |
| DET. | 0.49 MA. |
| 1N5G | 1.2 MA. |
| 1H5G | .026 MA. |
| 1Q5GT | 6.0 MA. |

# Alignment Procedure

**Cathode-ray Alignment** is the preferable method. Connections for the oscillograph are as follows: Vertical "Hi" to E on the 2nd I-F transformer, Vertical "O" to chassis.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

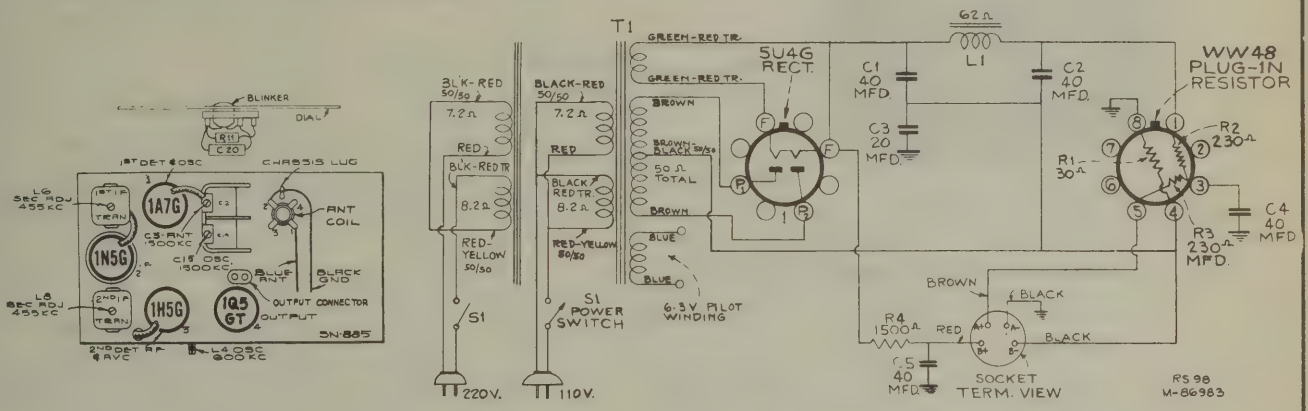
**Pre-setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

## Precautionary Lead Dress

1. Red lead from second i-f transformer to screen terminal of 1N5-G must be dressed close to and along edge of chassis.
2. Twisted green wire from antenna coil to gang must be 9 turns and kept clear of rotor.
3. Blue and green leads to volume control must be dressed close to chassis and between gang and front apron.
4. The opening in the shield of the 1N5-G should be turned away from the chassis and the i-f transformers.
5. Antenna and ground wires shoud be twisted together.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 1N5-G I-F grid cap, in series with 0.01 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F transformer) |
| No. 2 | 1A7-G 1st-det. grid cap in series with 0.01 mfd. | 455 kc | | L5 and L6 (1st I-F transformer) |
| No. 3 | Antenna lead, in series with 200 mmfd. | 600 kc | 600 kc | L4 (oscillator) L2 (antenna) |
| No. 4 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc | C15† (oscillator) C3 (antenna) |

† Trimmer C16 on gang condenser should be unscrewed one complete turn from tight, before adjusting C15.




*Schematic Diagram—Model CV-40*

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES BT41 (RC-449)—BK41 (RC-449A)** |
| 12629 | Capacitor—56 mmfd (C6) |
| 12723 | Capacitor—56 mmfd. (C13) |
| 14262 | Capacitor—110 mmfd. (C5) |
| 12404 | Capacitor—120 mmfd. (C7, C8) |
| 12725 | Capacitor—150 mmfd. (C11) |
| 14712 | Capacitor—180 mmfd. (C9) |
| 32599 | Capacitor—430 mmfd. (C17) |
| 5148 | Capacitor—.007 mfd. (C12) |
| 14393 | Capacitor—.01 mfd. (C4, C10, C19) |
| 4839 | Capacitor—0.1 mfd. (C1, C20) |
| 32187 | Capacitor—8 mfd., 150 volts (C18) |
| 32150 | Coil—Antenna coil assembly (L1, L2) |
| 32148 | Coil—Oscillator coil assembly (L3, L4) |
| 34375 | Condenser—2 gang variable tuning with drum (C2, C3, C14, C15, C16) |
| 32634 | Cord—Drive cord |
| 34377 | Dial—Dial scale only |
| 34378 | Indicator—Dial pointer |
| 34256 | Lamp—Blinker lamp |
| 34376 | Plate—Dial scale mounting plate and bracket, complete with scale |
| 34498 | Plug—4-prong male for battery cable |
| 12262 | Resistor—680 ohms, ½ watt (R9) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R3) |
| 13715 | Resistor—68,000 ohms, ½ watt (R1) |
| 12264 | Resistor—220,000 ohms, ½ watt (R10) |
| 13730 | Resistor—1 megohm, ½ watt (R4, R6) |
| 12679 | Resistor—2.2 megohm, ½ watt (R2, R7, R8) |
| 13167 | Resistor—3.9 megohm, ½ watt (R11) |
| 14887 | Retainer—Retaining ring for tuning shaft |
| 30952 | Shaft—Tuning knob shaft (Model BT41) |
| 32597 | Shaft—Tuning knob shaft (Model BK41) |
| 4233 | Shield—Tube shield |
| 30956 | Socket—Speaker socket |
| 31251 | Socket—Tube socket |
| 14191 | Spring—Drive cord tension spring |
| 14261 | Transformer—First i-f transformer |
| 14308 | Transformer—Second i-f transformer |
| 30947 | Volume control and switch (Model BT41) |
| 34557 | Volume control and switch (Model BK41) |

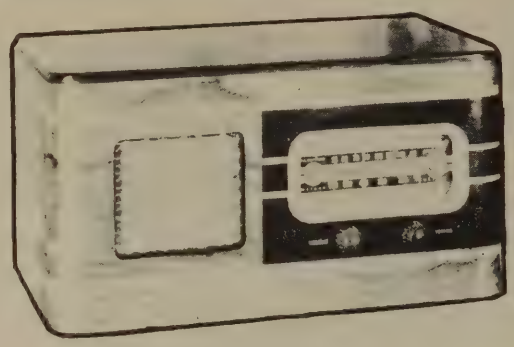
| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (MODEL BT41) (84226-3)** |
| 32163 | Cone—Speaker cone and voice coil (L9) |
| 5133 | Pin—Contact pin for speaker leads |
| 32164 | Transformer—Output transformer (T1) |
| | **SPEAKER ASSEMBLIES (MODEL BK41) (84760-1)** |
| 34385 | Cone—Speaker cone, voice coil, and metal housing |
| 5133 | Pin—Contact pin for speaker leads |
| 34386 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 34380 | Escutcheon—Dial escutcheon and crystal |
| 30863 | Knob—Tuning or volume control knob (Model BT41) |
| 33434 | Knob—Tuning or volume control knob (Model BK41) |
| 30900 | Spring—Retaining spring for knobs (Model BT 41) |
| 14270 | Spring—Retaining spring for knobs (Model BK 41) |
| | **MODEL CV 40** |
| 34563 | Ballast—Ballast resistor tube WW48 (R1, R2) |
| 32826 | Capacitor—Electrolytic, 2 sections 40 mfd. and 1 section 20 mfd. (2 used) (C1, C2, C3, C4, C5) |
| 34564 | Cover—Power switch cover |
| 34560 | Reactor—Filter reactor (L1) |
| 34563 | Resistor—Ballast resistor tube WW48 (R1, R2) |
| 14499 | Resistor—1,500 ohms, ½ watt (R4) |
| 34562 | Socket—4-contact female for power output |
| 31319 | Socket—Rectifier or ballast tube socket |
| 34561 | Switch—S.P.S.T. power switch (S1) |
| 34559 | Transformer—Power transformer 105-125 and 200-250 volts, 50-60 cycle (T1) |
| 34563 | Tube—Ballast resistor tube WW48 (R1, R2) |

# MODELS BK-42 and BT-42

Chassis No. RC-408C RC-408A

## Four-Tube, Single-Band, Battery-Operated Superheterodyne Receivers

*Model BK-42 (RC-408C).*



**Precautionary Lead Dress.—**

1. All filament (brown) and B+ (red) leads must be dressed away from unshielded I.F. coil.

2. Green grid lead of 1A7G tube to be twisted around antenna (blue) lead for capacity coupling.

3. Red and brown battery cable leads to be dressed and held against front apron with tape.

## Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-1A7-G ..... 1st-Det.—Osc.
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-1Q5-G ..... Output

Batteries Required

1 "A"—"B" Pack (Eveready No. 748 or equivalent).

Current Consumption

"A," 0.24 ampere—"B," 10 milliamperes.

Power Output

Undistorted ..... 0.15 watt
Maximum ..... 0.25 watt

Loudspeaker **BT-42**

Type .....5-inch permanent-magnet dynamic
Voice-coil Impedance ..... 3.3 ohms at 400 cycles

## MODEL BK-42,

**Technical Information and Service Data:**

Refer to Service Data on Model BT-42 and the following parts:

| Stock No. | | |
|---|---|---|
| 12635 | Capacitor—1,000 mmfd. (C16)..... | |
| | SPEAKER ASSEMBLY, BK-42 (84649-2) 6-in. P. M. | |
| 34507 | Cone—Speaker cone and voice coil.. | |
| 34508 | Transformer—Output transformer:.. | |

## MODELS BK-42, BT-42

**Oscillator Grid Resistor:**

In some production, the oscillator grid resistor (R1) is changed from 220,000 ohms to 150,000 ohms (Stock No. 14020).

**Dial Drive Slippage, or Cord Breakage:**

In cases where abnormal slippage or breakage of the dial cord is experienced, the following corrective measures are suggested:

**SLIPPAGE:** Slippage may be due to one or more of the following conditions:

(a) Chassis mounted too far into cabinet causing dial pointer to rub against cabinet.
(b) A bent cord drum touching chassis.
(c) Dial cord rubbing against parts in chassis.
(d) Tuning condenser bearing too stiff.

**BREAKAGE:** Breakage of dial cord may be caused by any one of the following or a combination thereof:

(a) The machined surface at the drive pulley being rough.
(b) Surface of guide rivets being rough.
(c) Dial cord rubbing against head of guide pin rivets due to poor alignment between rivets and dial cord drum.
(d) Guide pin rivets should be flush with mounting plate and tightly riveted at right angle to the plate, so as to avoid the possibility of a crack between rivet shoulder and dial plate, permitting dial cord to enter and resulting in a premature failure of cord.

**A revised replacement shaft Stock No. 34124 is available for correcting slippage.**

Pull out tuning shaft after first removing the slotted spring washer used for holding tuning shaft in place.

Insert replacement shaft and lock in place with spring washer after first having applied a drop of oil to the shaft bearing.

Install new dial cord, placing 3¾ turns around the tuning shaft pulley.

**Replacement Dial, Pulley, and Shaft:**

A complete Dial Assembly (Stock No. 38781) consisting of dial plate, dial scale, pulleys, drive drum, drive cord and spring, shaft, lamp bracket, and terminal strip is available for replacement on the Model BT-42 receiver.

However, the original assembly may be brought up to date by replacing the studs and shaft as follows:

File off the two old studs on the dial plate.

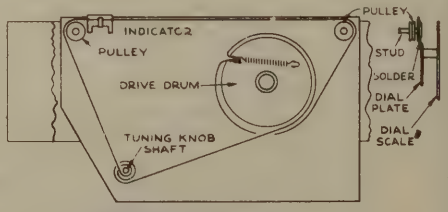
Tin, with solder, the surface (between dial and plate) around the stud holes, and insert the new pulley studs with the heads against the plate.

Solder the studs so their heads are flat against the plate and the shanks are at right angles to the plate.

The pulleys can now be slipped over the studs with the bearing surface toward the plate. Apply a drop of oil on each stud.

Thread the drive cord as shown in the drawing.

| Stock No. | Description | Unit List Price |
|---|---|---|
| 38781 | Dial assembly complete (New type, including Stock No. 38783 and 34124) ..... | 2.50 |
| 38783 | Pulley (2 pulleys, 2 studs). | .25 |
| 34124 | Shaft (Shaft and spring washer) ..... | .35 |



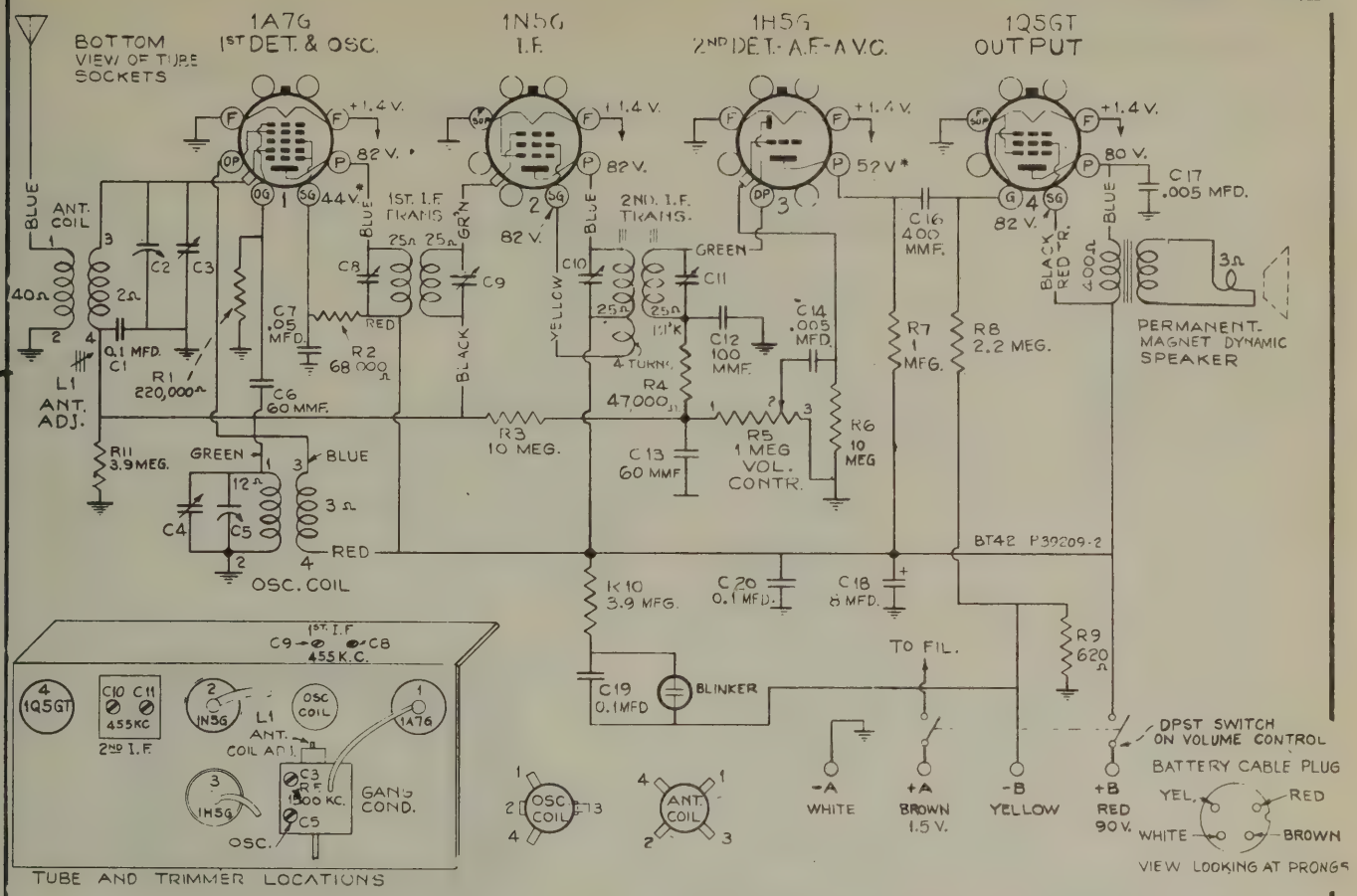

## MODEL BT-42

**Replacement Loudspeaker Cones:**

Three types of loudspeakers have been employed in Model BT-42. Replacement cones are identified and available as follows:

| Speaker Marking | Cone Stock No. |
|---|---|
| 84650-1 | 33458 |
| 84650-2 | 35483 |
| 84650-5 | 35127 |

The speaker marked 84650-5 uses output transformer Stock No. 35128.




## Alignment Procedure

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

**Pre-setting Dial.**—With the gang condenser fully out of mesh, the indicator should point to the extreme right (high frequency) mark on the dial scale.

**CAUTION.**—When ready to install or replace batteries or tubes or to make any repairs or changes, be sure to turn off power switch.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn Radio Dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1A7G 1st-Det. grid cap, in series with .01 mfd. | 455 kc | Quiet point at 550 kc End of Dial | C8, C9, C10, C11 (1st and 2nd I-F transformers) |
| 2 | Antenna lead (blue) in series with 100 mmfd. | 1,500 kc | 1,500 kc | C5 (oscillator) |
| 3 | | 600 kc | 600 kc | L1 (antenna)* |
| 4 | | 1,500 kc | 1,500 kc | C3 (antenna) |

* When adjusting L1 (antenna), trimmer C3 should be in a minimum capacity position (unscrewed).

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **CHASSIS ASSEMBLY** | | 12679 | Resistor—2.2 megohm ½ watt (R8) | |
| 13057 | Capacitor—60 mmfd (C6, C13) | | 13167 | Resistor—3.9 megohm ½ watt (R10, R11) | |
| 12720 | Capacitor—100 mmfd (C12) | | 13601 | Resistor—10 megohm ½ watt (R3, R6) | |
| 30433 | Capacitor—400 mmfd (C16) | | 34124 | Shaft—Tuning knob shaft | |
| 33584 | Capacitor—.005 mfd (C14, C17) | | 32595 | Shield—Tube shield | |
| 32787 | Capacitor—.05 mfd (C7) | | 32537 | Socket—Tube socket | |
| 4839 | Capacitor—0.1 mfd (C1, C19, C20) | | 31615 | Spring—Drive cord tension spring | |
| 33952 | Capacitor—8 mfd (C18) | | 33298 | Spring—Retaining spring for drum | |
| 34126 | Clip—Dial lamp clip | | 34118 | Transformer—First I-F transformer | |
| 32150 | Coil—Antenna coil | | 34119 | Transformer—Second I-F transformer | |
| 32573 | Coil—Oscillator coil | | 34120 | Volume Control and switch | |
| 34121 | Condenser—2 gang variable tuning | | | **SPEAKER ASSEMBLY 84650-1** | |
| 32634 | Cord—Indicator drive cord | | | | |
| 34125 | Dial—Dial scale | | 33458 | Cone—Speaker cone and voice coil | |
| 33453 | Drum—Indicator drive cord drum | | 33459 | Transformer—Output transformer | |
| 34123 | Indicator—Dial scale pointer | | | **MISCELLANEOUS ASSEMBLY** | |
| 34256 | Lamp—Blinker lamp | | 34127 | Escutcheon—Dial escutcheon | |
| 34122 | Plate—Metal support plate and bushing for dial | | 31659 | Knob—Tuning or volume control knob | |
| 30550 | Plug—4 contact male plug for battery cable | | 33312 | Nut—Speed nut for tuning condenser support plate | |
| 3708 | Resistor—620 ohms, ½ watt (R9) | | 31646 | Spring—Retaining spring for knob | |
| 12412 | Resistor—47,000 ohms, ½ watt (R4) | | | | |
| 13715 | Resistor—68,000 ohms, ½ watt (R2) | | | | |
| 12264 | Resistor—220,000 ohms, ½ watt (R1) | | | | |
| 13730 | Resistor—1 megohm ½ watt (R7) | | | | |

# MODEL Q44

## Chassis No. RC-531

## Eleven-Tube and Magic Eye, Eight-Band, Superheterodyne

### Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Long Wave ("X" Band) | 140-410 kc (2145-735 m) |
| Medium Wave ("A" Band) | 540-1,720 kc (555-174 m) |
| Short Wave ("B" Band) | 3.1-9.5 mc (97.5-31.5 m) |
| 31 Meter Spread Band | 9.45-11.8 mc (31.8-25.4 m) |
| 25 Meter Spread Band | 11.65-15.2 mc (25.6-19.9 m) |
| 19 Meter Spread Band | 15.1-17.75 mc (19.9-16.9 m) |
| 16 Meter Spread Band | 17.73-18.5 mc (16.9-16.2 m) |
| 13 Meter Spread Band | 21.45-22.5 mc (13.95-13.3) |

INTERMEDIATE FREQUENCY ..... 455 kc

RCA TUBE COMPLEMENT

| | | |
|---|---|---|
| (1) | RCA-6SK7 | R-F Amplifier |
| (2) | RCA-6SA7 | Oscillator |
| (3) | RCA-6SA7 | 1st Detector |
| (4) | RCA-6B8-G | A.V.C. Amplifier |
| (5) | RCA-6U5/6G5 | Tuning Indicator |
| (6) | RCA-6SK7 | 1st I-F Amplifier |
| (7) | RCA-6SK7 | 2nd I-F Amplifier |
| (8) | RCA-6R7 | 2nd Detector and 2nd A-F Amplifier |
| (9) | RCA-6SK7 | 1st Audio Amplifier |
| (10) | RCA-6AD7-G | Phase Inverter and Power Output |
| (11) | RCA-6F6-G | Power Output |
| (12) | RCA-5U4-G | Rectifier |

PILOT LAMPS .....10 Type No. 51 6-8 volts, 0.2 amps.

POWER SUPPLY RATING

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 125 watts |
| 105-125 volts, 25-60 cycles | 125 watts |
| 100-130, 140-160, 195-250 volts, 40-60 cycles | 125 watts |

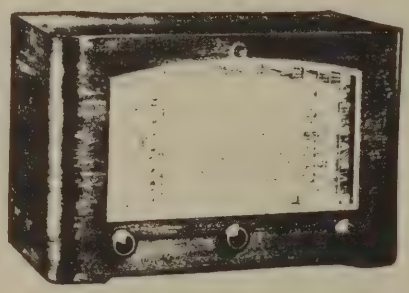
POWER OUTPUT RATING

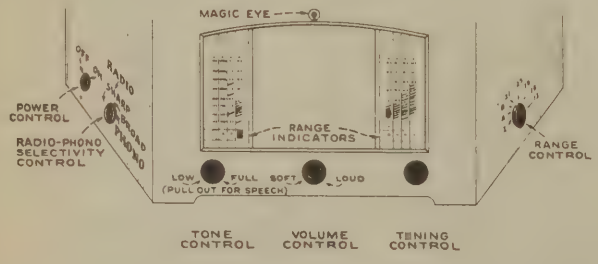
| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 10-inch Electrodynamic |
| Voice Coil Impedance | 2.4 ohms at 400 cycles |
| Identification Number | 88885-502 |

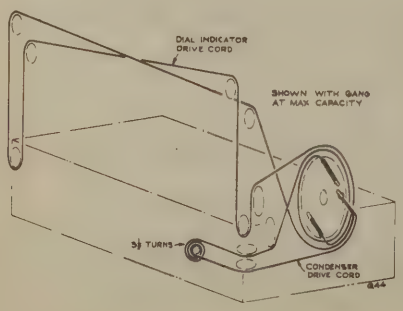
| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 15 29/32 | 24 7/16 | 12 1/2 |
| Chassis Base Dimensions (inches) | 3 1/8 | 20 | 8 7/8 |
| Weight | 49 lbs (net) | 56 lbs (shipping) | |
| Tuning Drive Ratio | 25 to 1 | | |

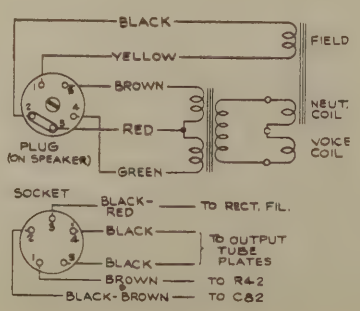


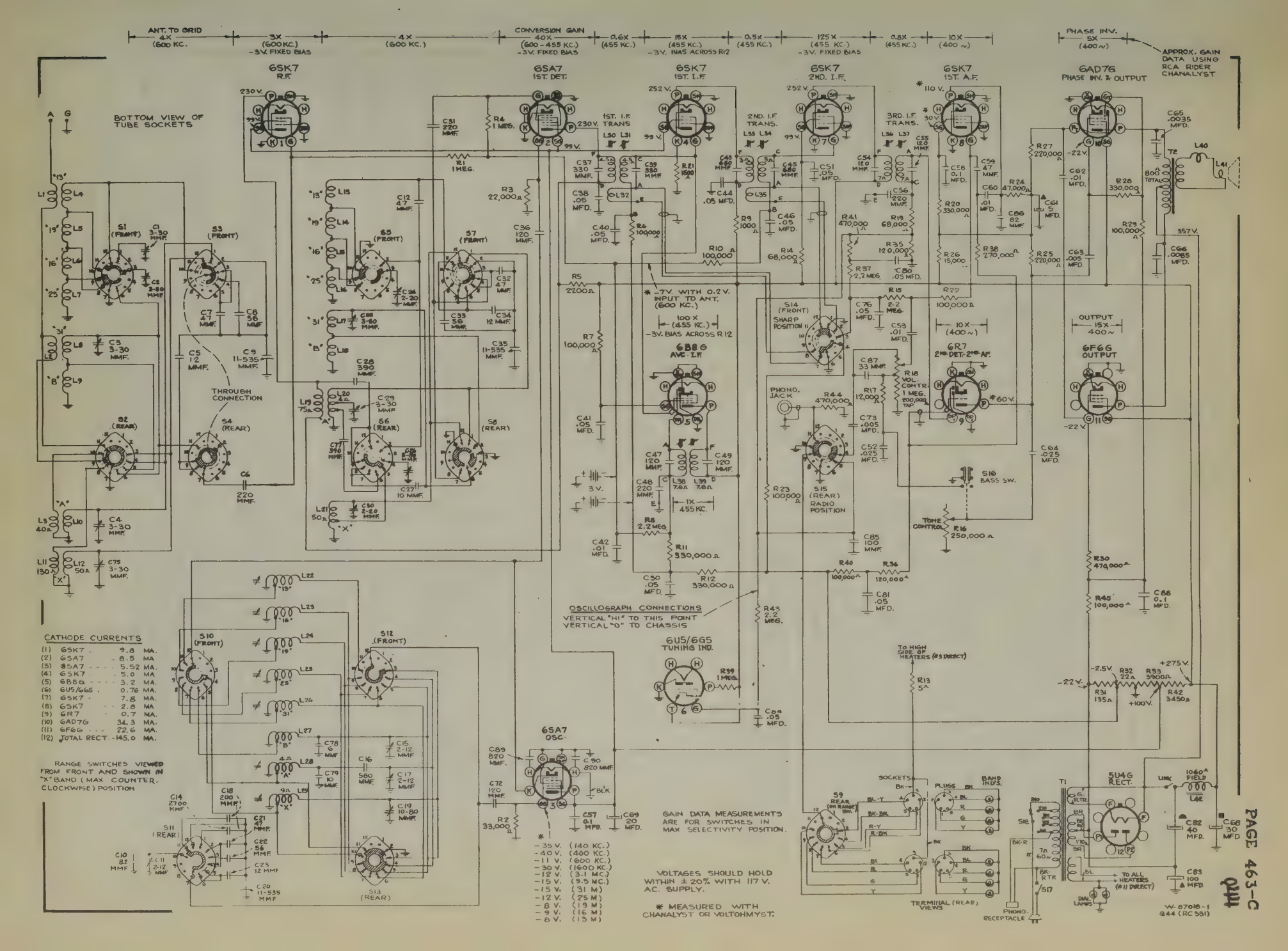



### General Description

Model Q44 is an eleven tube, eight band superheterodyne receiver that uses a Magic Eye tube for tuning indications. Features of design include: Selectivity control, spread bands for short wave reception, two new vertical thermometer type dials, magnetite core I-F and oscillator coils, temperature compensated circuits, one R-F and 2 I-F amplifier stages, separate A. V. C. amplifier stage, plug in phonograph connection and radio-phono switch, speech-music switch with continuously variable bass-treble tone control, and air core trimming capacitors.




ANT. TO GRID 4X (600 KC.)
3X (600 KC.) -3V. FIXED BIAS
4X (600 KC.)
CONVERSION GAIN 40X (600 - 455 KC.) -3V. FIXED BIAS
0.6X (455 KC.)
15X (455 KC.) -3V. BIAS ACROSS R12
0.5X (455 KC.)
125X (455 KC.) -3V. FIXED BIAS
0.8X (455 KC.)
10X (400 ~)
PHASE INV. 5X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6SK7 R.F.
6SA7 1ST. DET.
6SK7 1ST. I.F.
6SK7 2ND. I.F.
6SK7 1ST. A.F.
6AD7G PHASE INV. & OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
1ST. I.F. TRANS.
2ND. I.F. TRANS.
3RD. I.F. TRANS.
6B8G AVC - I.F.
6R7 2ND DET.-2ND A.F.
6F6G OUTPUT
OUTPUT 15X 400 ~
THROUGH CONNECTION
PHONO. JACK
S16 BASS SW.
S15 (REAR) RADIO POSITION
TONE CONTROL
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS POINT
VERTICAL "G" TO CHASSIS
6U5/6G5 TUNING IND.
6SA7 OSC.
TO HIGH SIDE OF HEATERS (#3 DIRECT)
5U4G RECT.
TO ALL HEATERS (#11 DIRECT)
DIAL LAMPS
PHONO. RECEPTACLE
TERMINAL (REAR) VIEWS
SOCKETS
PLUGS
BAND INDS.
CATHODE CURRENTS
(1) 6SK7 - 9.8 MA.
(2) 6SA7 - 8.5 MA
(3) 6SA7 - 5.52 MA.
(4) 6SK7 - 5.0 MA
(5) 6B8G - 3.2 MA.
(6) 6U5/6G5 - 0.76 MA.
(7) 6SK7 - 7.8 MA.
(8) 6SK7 - 2.8 MA.
(9) 6R7 - 0.7 MA.
(10) 6AD7G 34.3 MA.
(11) 6F6G 22.6 MA.
(12) TOTAL RECT. - 145.0 MA.
RANGE SWITCHES VIEWED FROM FRONT AND SHOWN IN "X" BAND (MAX COUNTER-CLOCKWISE) POSITION
GAIN DATA MEASUREMENTS ARE FOR SWITCHES IN MAX SELECTIVITY POSITION.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
-35 V. (140 KC.)
-40 V. (400 KC.)
-11 V. (600 KC.)
-30 V. (1600 KC.)
-12 V. (3.1 MC.)
-15 V. (9.5 MC.)
-15 V. (31 M)
-12 V. (25 M)
-8 V. (19 M)
-9 V. (16 M)
-8 V. (13 M)
W-87018-1 G44 (RC 531)
PAGE 463-C

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

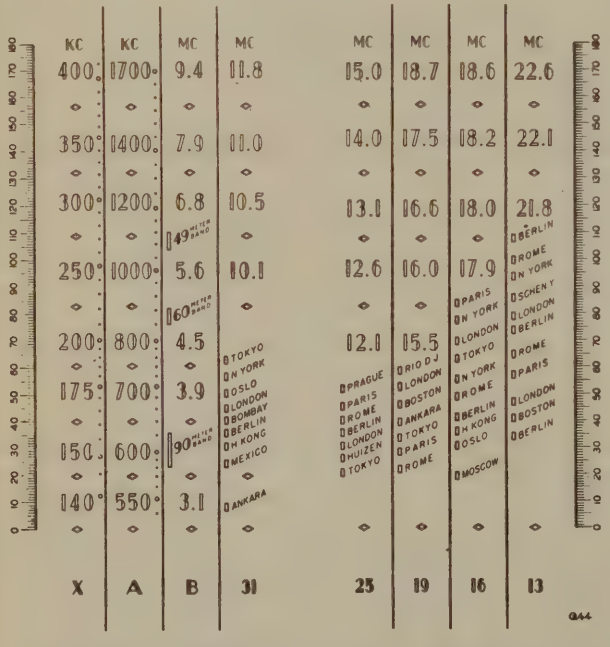
**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dials are fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "0°" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at the sides.

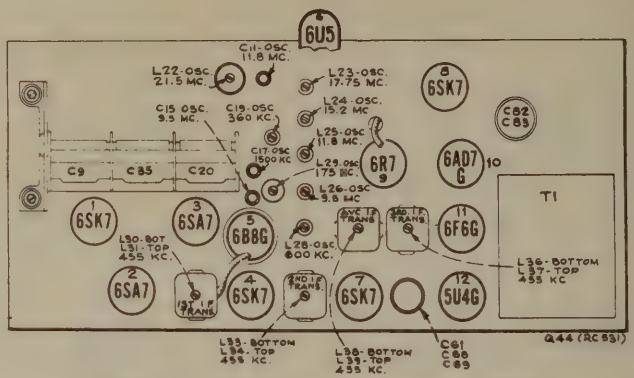
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0°" mark on the calibration scale when the plates are fully meshed.



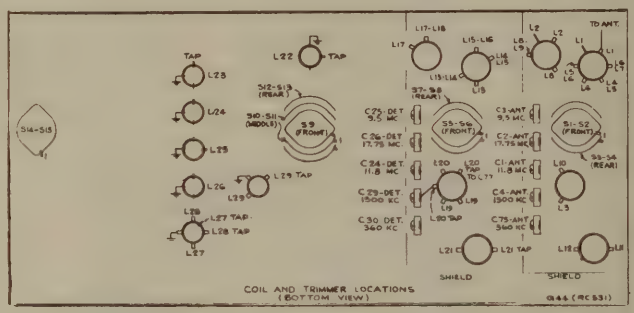

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."




*Tube and Trimmer Locations (Top View)*

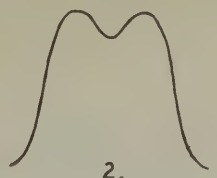



*Coil and Trimmer Locations (Bottom View)*

**Precautionary Lead Dress:—**

1. All oscillator leads should be kept as short as possible.
2. Both yellow leads in the antenna switch section must be dressed towards the lug end and away from the coil windings, and also held to length.
3. Both yellow leads to adjacent lugs on detector coil must be dressed towards lug end and away from the coil windings, and also held to length.
4. The following leads should be held to length
   from No. 8 on S1
   from No. 5 on S2
   from No. 8 on S5
5. Lead from No. 4 on S15 must be dressed along the chassis away from all heater leads.
6. Lead from No. 5 on S15: well away from all heater leads.
7. The diode lead and the ground lead from the third I-F must be twisted.
8. The diode lead and the ground lead from A.V.C. I-F transformer must be twisted.
9. The lead on No. 9 of S15 should be away from the volume control and first audio tube.
10. The two condensers on the oscillator heater must be as short as possible and dressed away by at least 1/4" from the bracket, parts wired to it, the yellow lead, and the oscillator grid lead.
11. Green, blue and double enamel leads from the oscillator coil nearest the rear apron must bear tightly against each other.
12. The oscillator grid coupling condenser must bear tightly against the styrol; the sprayed mica must likewise bear on the styrol from the opposite side.
13. The long ground lead from the oscillator heater must be kept away from all condensers, resistors, and leads to R-F tubes.

*I.F. Selectivity Curves*
*At Left—"Sharp"*
*At Right—"Broad"*




| Step | Connect the high side of test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | Turn selectivity control maximum counter-clockwise for maximum selectivity. | | | |
| 2 | 6SK7 2nd I-F grid in series with .01 mfd. | 455 kc | "A" Band Quiet point between 550-750 kc | L37, L36 Third I-F Transformer |
| 3 | 6SK7 1st I-F grid in series with .01 mfd. | | | L34, L33 Second I-F Transformer |
| 4 | 6SA7 1st Det. grid in series with .01 mfd. | | | L31, L30 First I-F Transformer |
| 5 | With selectivity control in broad position retouch L37, L36 for selectivity curve 2. | | | |
| 5A | With selectivity control in sharp position see that curve 1 has not changed appreciably. | | | |
| 6 | 6SA7 1st Det. grid in series with .01 mfd. | 455 kc | "A" Band quiet point 550-750 kc | L39, L38 AVC Transformer* |
| 7 | Antenna Terminal in series with 200 mmfd. | 360 kc | "X" Band 360 kc (149°) | C19 (osc.)** C30 (det.) C75 (ant.) |
| 8 | | 175 kc | "X" Band 175 kc (51°) | L29 (osc.) (Rock-in) |
| 9 | Repeat steps 7 and 8. | | | |
| 10 | Antenna Terminal in series with 200 mmfd. | 1,500 kc | "A" Band 1,500 kc (150.5°) | C17 (osc.) C29 (det.) C4 (ant.) |
| 11 | | 600 kc | "A" Band 600 kc (26°) | L28 (osc.) (Rock-in) |
| 12 | Repeat steps 10 and 11. | | | |
| 13 | Antenna Terminal in series with 300 ohms | 9.5 mc | "31M" Band 9.5 mc (21.5°) | L26 (osc.)*** C25 (det.) C3 (ant.) |
| 14 | | 11.8 mc | "31M" Band 11.8 mc (169.5°) | C11 (osc.)*** |
| 15 | | Repeat steps 13 and 14 until correct on dial. | | |
| 16 | | 9.5 mc | "B" Band 9.5 mc (172.5°) | C15 (osc.)*** |
| 17 | | 11.8 mc | "25M" Band 11.8 mc (36°) | L25 (osc.)*** C24 (det.) C1 (ant.) |
| 18 | | 15.2 mc | "19M" Band 15.2 mc (37°) | L24 (osc.)*** |
| 19 | | 17.75 mc | "16M" Band 17.75 mc (28°) | L23 (osc.)**** C26 (det.) C2 (ant.) |
| 20 | | 21.5 mc | "13M" Band 21.5 mc (59°) | L22 (osc.)**** |

* Connect oscilloscope to lug C of A.V.C. transformer.
** Core of L29 should be approximately ⅝ inches out before adjusting C19.
*** Use minimum capacity or inductance peak.
**** Use maximum inductance peak.
**NOTE: Oscillator tracks above all signals except on 16 and 13 meter bands.**

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-531)** |
| 31767 | Board—"Antenna-Ground" board |
| 36625 | Bracket—Angular support bracket complete with 2 pulleys |
| 36624 | Bracket—Dial support bracket complete with 5 pulleys |
| 36626 | Bracket—Support bracket with double pulley |
| 35642 | Calibrator—Drive drum calibrator |
| 12714 | Capacitor—Air trimmer—medium—2-12 mmf. |
| 36631 | Capacitor—Mica trimmer comprising 3 sections of 2-20 mmf. each, 1 section of 5-50 mmf. and 1 section of 3-30 mmf. |
| 36636 | Capacitor—Mica trimmer—1 section of 8-80 mmf. |
| 36630 | Capacitor—Mica trimmer comprising 5 sections of 3-30 mmf. each |
| 35646 | Capacitor—6 mmf. |
| 33381 | Capacitor—8.2 mmf. |
| 13200 | Capacitor—10 mmf. |
| 13002 | Capacitor—12 mmf., silvered mica |
| 33380 | Capacitor—12 mmf., ceramic |
| 12948 | Capacitor—33 mmf. |
| 13141 | Capacitor—47 mmf., silvered mica |
| 33102 | Capacitor—47 mmf., ceramic |
| 12723 | Capacitor—56 mmf., silvered mica |
| 36843 | Capacitor—56 mmf., ceramic |
| 12813 | Capacitor—82 mmf. |
| 12720 | Capacitor—100 mmf. |
| 31813 | Capacitor—120 mmfd., mica |
| 12724 | Capacitor—120 mmf., moulded mica |
| 30232 | Capacitor—200 mmf. |
| 36616 | Capacitor—220 mmf., mica |
| 12694 | Capacitor—220 mmf., moulded mica |
| 30964 | Capacitor—330 mmf. |
| 13894 | Capacitor—390 mmf. |
| 33235 | Capacitor—580 mmf. |
| 36174 | Capacitor—680 mmf. |
| 12536 | Capacitor—820 mmfd. |
| 30057 | Capacitor—2,700 mmf. |
| 30303 | Capacitor—.0035 mfd. |
| 4886 | Capacitor—.05 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 36623 | Capacitor—Electrolytic comprising 1 section of 30 mfd. 350 volts, 1 section of 5 mfd. 350 volts and 1 section of 20 mfd. 250 volts |
| 35016 | Capacitor—Electrolytic comprising 1 section of 40 mfd. 450 volts and 1 section of 100 mfd. 25 volts |
| 34649 | Coil—Antenna coil—"A" band |
| 34647 | Coil—Antenna coil—"B" and 31 meter band |
| 32823 | Coil—Antenna coil—"X" band |
| 36629 | Coil—Antenna coil—25-19-16-13 meter band |
| 36632 | Coil—Oscillator coil—"A" and "B" band |
| 31837 | Coil—Oscillator coil—"X" band |
| 36617 | Coil—Oscillator coil—13 meter band |
| 34657 | Coil—Oscillator coil—16 meter band |
| 36633 | Coil—Oscillator coil—19 meter band |
| 36634 | Coil—Oscillator coil—25 meter band |
| 36635 | Coil—Oscillator coil—31 meter band |
| 34652 | Coil—R.F. coil—"A" band |
| 34650 | Coil—R.F. coil—"B" and 31 meter band |
| 34651 | Coil—R.F. coil—25-19-16-13 meter band |
| 33765 | Coil—R.F. coil—"X" band |
| 34645 | Condenser—Variable tuning condenser |
| 36621 | Control—Tone control |
| 36619 | Control—Volume control |
| 36093 | Core—Adjustable core and stud for "X" band oscillator coil |
| 31259 | Core—Adjustable core and stud for oscillator coils, Stock Nos. 36617, 34657, 36632, 36633, 36634, 36635 |
| 35627 | Drum—Drive drum less calibrator |
| 12493 | Plug—5-contact female plug for speaker cable or band indicator cable |
| 36627 | Pulley—Drive cord pulley—$\frac{3}{4}$-in. O.D. |
| 35630 | Pulley—Drive cord pulley—1$\frac{1}{4}$-in. O.D. |
| 35641 | Pulley—Drive cord pulley—1$\frac{3}{4}$-in. O.D. |
| 36637 | Receptacle—Power line receptacle |
| 36618 | Resistor—Voltage divider comprising 1 section of 3,450 ohms, 7.5 watt, 1 section of 3,900 ohms, 3 watt, 1 section of 22 ohm 0.5 watt and 1 section 135 ohms, 3 watt |
| 36842 | Resistor—5 ohms, 1 watt |
| 30152 | Resistor—1,000 ohms, 1 watt |
| 30654 | Resistor—1,500 ohms, $\frac{1}{2}$ watt |
| 34767 | Resistor—2,200 ohms, $\frac{1}{2}$ watt |
| 30128 | Resistor—12,000 ohms, $\frac{1}{2}$ watt |
| 36714 | Resistor—15,000 ohms, $\frac{1}{2}$ watt |
| 13998 | Resistor—22,000 ohms, $\frac{1}{2}$ watt |
| 12454 | Resistor—33,000 ohms, $\frac{1}{2}$ watt |
| 30787 | Resistor—47,000 ohms, $\frac{1}{2}$ watt |
| 13715 | Resistor—68,000 ohms, $\frac{1}{2}$ watt |
| 14138 | Resistor—68,000 ohms, $\frac{1}{2}$ watt |
| 14560 | Resistor—100,000 ohms, $\frac{1}{2}$ watt |
| 3252 | Resistor—100,000 ohms, $\frac{1}{2}$ watt |
| 13734 | Resistor—120,000 ohms, $\frac{1}{2}$ watt |
| 14583 | Resistor—220,000 ohms, $\frac{1}{2}$ watt |
| 12199 | Resistor—270,000 ohms, $\frac{1}{2}$ watt |
| 14983 | Resistor—330,000 ohms, $\frac{1}{2}$ watt |
| 30784 | Resistor—330,000 ohms, $\frac{1}{2}$ watt |
| 12285 | Resistor—470,000 ohms, $\frac{1}{2}$ watt |
| 12013 | Resistor—1 megohm, 1/10 watt |
| 13730 | Resistor—1 megohm, $\frac{1}{2}$ watt |
| 12679 | Resistor—2.2 megohm, $\frac{1}{2}$ watt |
| 14350 | Screw—No. 8-32 square head set screw for drive drum |
| 36622 | Shaft—Tuning shaft and flywheel |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 34864 | Socket—Tuning tube socket |
| 31418 | Spring—Drive cord spring |
| 31261 | Spring—Retaining spring for adjustable cores and studs |
| 36620 | Switch—Phono-radio-selectivity switch |
| 36724 | Switch—Power switch |
| 36628 | Switch—Range switch |
| 34664 | Switch—Slide switch for tone control |
| 36614 | Transformer—1st I.F. transformer |
| 36443 | Transformer—2nd I.F. transformer |
| 36615 | Transformer—3rd I.F. and AVC transformer |
| 36977 | Transformer—Power transformer—105-120 volt, 25 cycle |
| 36473 | Transformer—Power transformer—100-130 volt, 140-160 volt, 190-220 volt, 230-250 volt, 50-60 cycles |
| 33726 | Washer—"C" washer to hold drive cord pulley |
| 37435 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLY (88885-502)** |
| 36914 | Coil—Field coil |
| 36913 | Cone—Cone complete with voice coil |
| 31539 | Plug—5-prong male plug for speaker |
| 36912 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37013 | Back—Cabinet back |
| 36639 | Bracket—Lamp bracket |
| 36638 | Clamp—Dial clamp |
| 34285 | Clip—Tuning indicator tube clip |
| 36640 | Crystal—Tuning indicator tube crystal |
| 36796 | Dial—Glass dial scale for 25, 19, 16 and 13 meter bands |
| 36795 | Dial—Glass dial scale for "X," "A," "B" and 31 meter bands |
| 36593 | Indicator—Station selector indicator |
| 35650 | Knob—Power or selector switch knob |
| 34490 | Knob—Range switch knob |
| 35955 | Knob—Volume control, tuning or tone control knob |
| 11765 | Lamp—Dial lamp |
| 12567 | Plug—5-contact female plug for band indicator cable |
| 36792 | Rail—Indicator pointer rail—L. H. |
| 36793 | Rail—Indicator pointer rail—R. H. |
| 36641 | Retainer—Tuning indicator tube crystal retainer |
| 36794 | Screen—Band indicator screen |
| 31482 | Screw—No. 8-32 square head set screw for extension shaft |
| 36658 | Shaft—Selectivity switch extension shaft |
| 31365 | Socket—Band indicator lamp socket |
| 14270 | Spring—Retaining spring for knobs |

# MODELS U-44 and U-45

Chassis No. RC-486-B RC-486-C

## Ten-Tube, Three-Band, AC, Superheterodyne. Radio-Phonographs

MODEL U-44

MODEL U-45

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,550 kc |
| Medium Wave | 1.5-4.0 mc |
| Short Wave | 5.8-18.0 mc |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | |
|---|---|
| ( 1) 6SK7 | R-F Amplifier |
| ( 2) 6SA7 | 1st Detector, Oscillator |
| ( 3) 6SK7 | I-F Amplifier |
| ( 4) 6H6 | 2nd Detector, A.V.C. |
| ( 5) 6SF5 | A-F Amplifier |
| ( 6) 6SF5 | Phase Inverter |
| ( 7) 6F6G | Power Output |
| ( 8) 6F6G | Power Output |
| ( 9) 6U5/6G5 | Tuning Indicator |
| (10) 5U4-G | Rectifier |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER

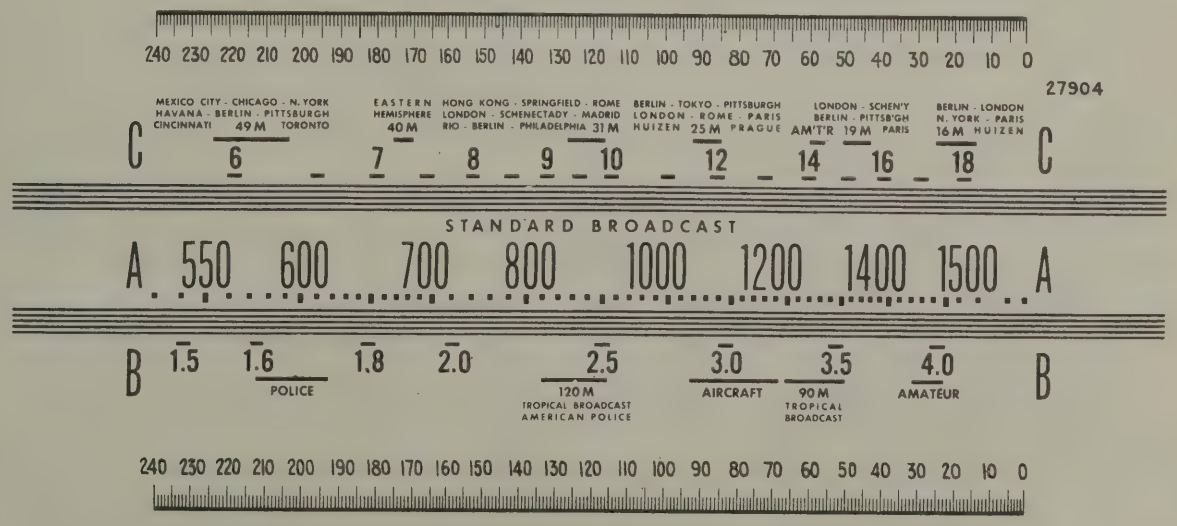
| | |
|---|---|
| Type | 12-inch electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

POWER SUPPLY RATINGS

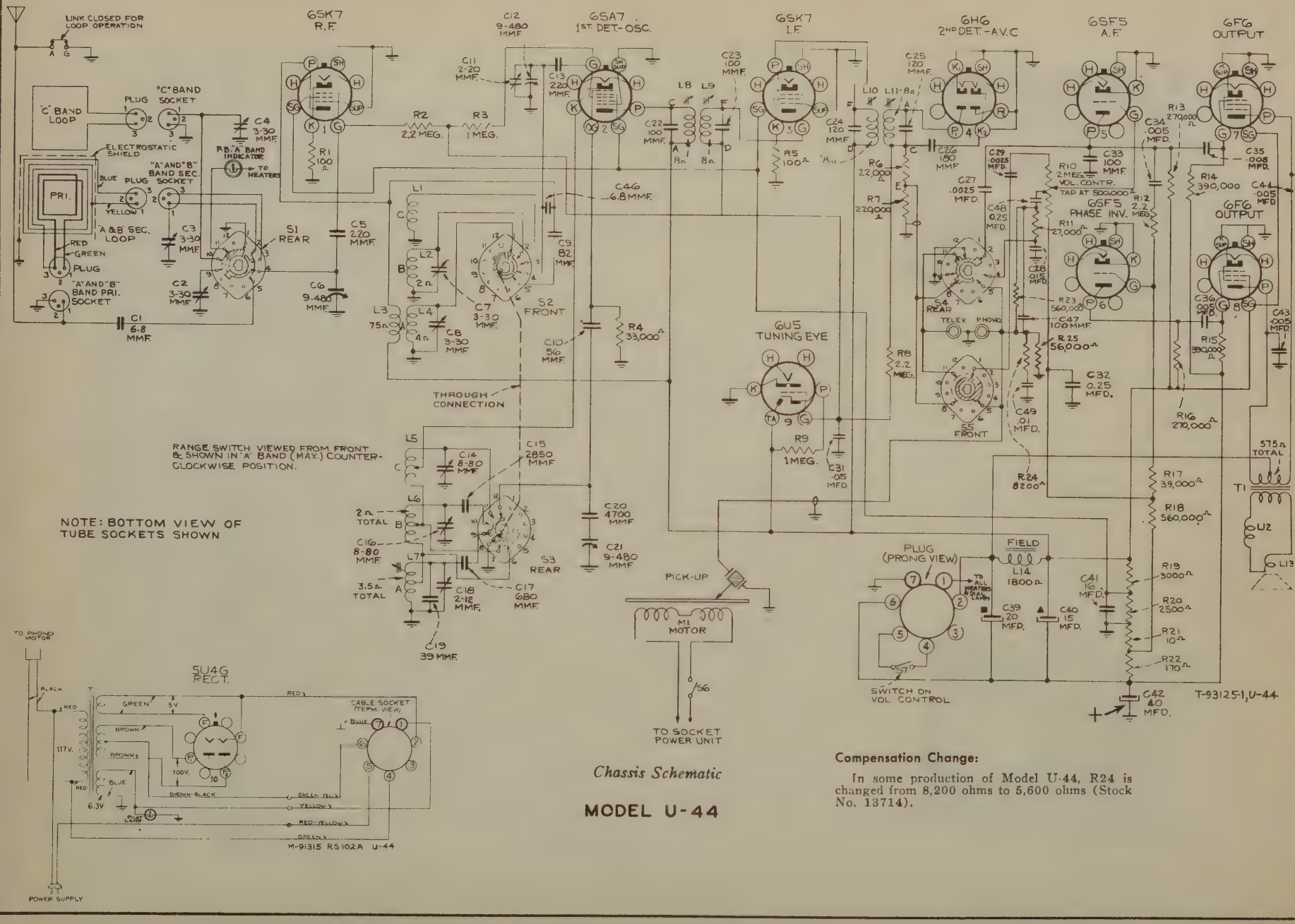
| | | |
|---|---|---|
| A-6 | 105-125 volts, 60 cycles, | U-44 137 Watts |
| A-5 | 105-125 volts, 50 cycles, | |
| B-2 | 105-125 volts, 25 cycles, | U-45 165 Watts |
| C6 | 105-130/140-160/200-250 volts, 60 cycles, | |
| C-5 | 105-130/140-160/200-250 volts, 50 cycles, | |

PHONOGRAPH

| | |
|---|---|
| Type RP-139 & RP-145 | Automatic |
| Record Capacity | Eight 10-inch or seven 12-inch |
| Pickup | Crystal |


240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27904
MEXICO CITY - CHICAGO - N. YORK
HAVANA - BERLIN - PITTSBURGH
CINCINNATI 49 M TORONTO
EASTERN HEMISPHERE 40 M
HONG KONG - SPRINGFIELD - ROME
LONDON - SCHENECTADY - MADRID
RIO - BERLIN - PHILADELPHIA 31 M
BERLIN - TOKYO - PITTSBURGH
LONDON - ROME - PARIS
HUIZEN 25 M PRAGUE
LONDON - SCHEN'Y
BERLIN - PITTSB'GH
AM'T'R 19 M PARIS
BERLIN - LONDON
N. YORK - PARIS
16 M HUIZEN
C 6 7 8 9 10 12 14 16 18 C
STANDARD BROADCAST
A 550 600 700 800 1000 1200 1400 1500 A
B 1.5 1.6 1.8 2.0 2.5 3.0 3.5 4.0 B
POLICE
120 M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90 M TROPICAL BROADCAST
AMATEUR
240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Receiver Dial Scales, and Corresponding 0-240° Calibration Scales*

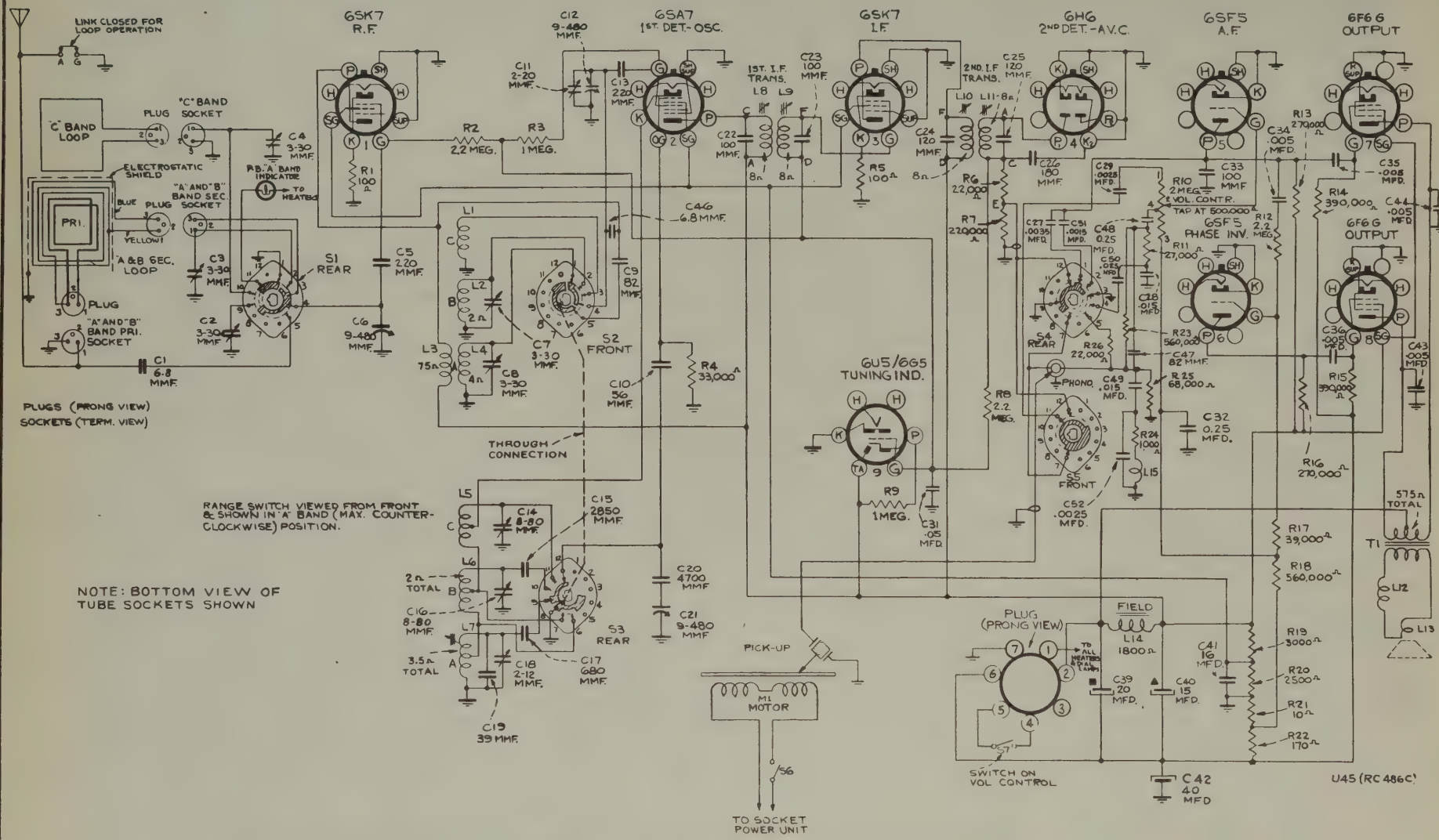



*Chassis Schematic*

## MODEL U-44

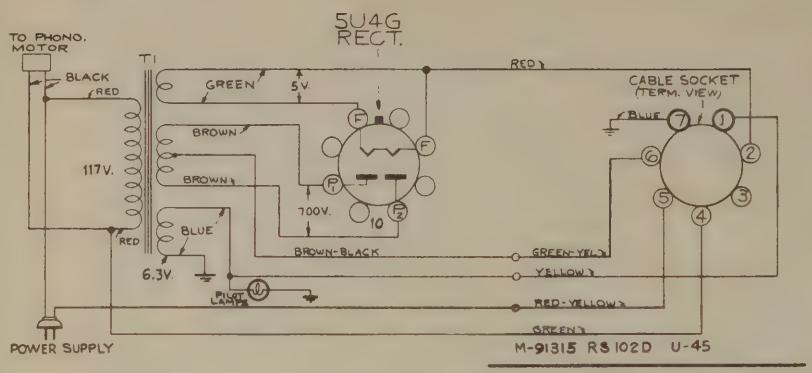
**Compensation Change:**

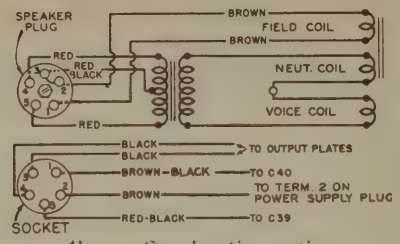
In some production of Model U-44, R24 is changed from 8,200 ohms to 5,600 ohms (Stock No. 13714).




**Note:** On some receivers R24 is 1,500 ohms, and the connection from the phono plug to terminal 7, on S4 and S5 is made through a 22,000 ohm resister, R27.

## MODEL U-45



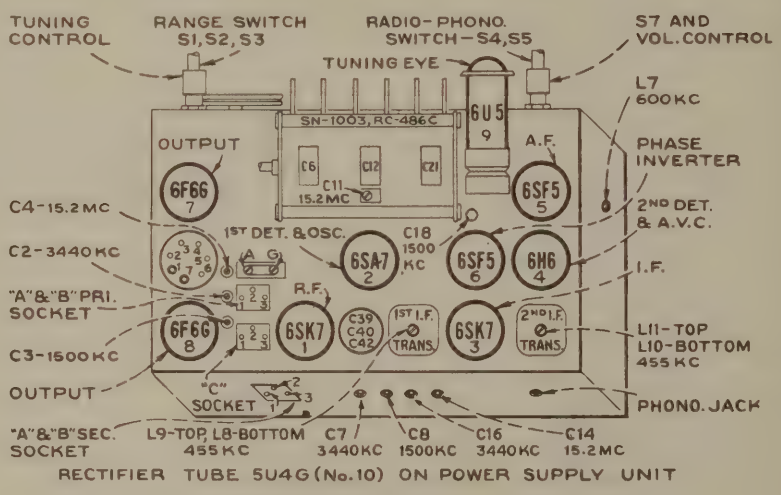




*Above—Speaker Connections*

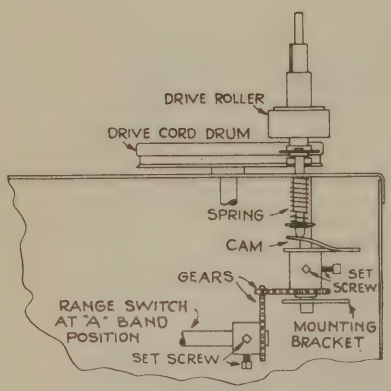
*At Left—S. P. U. Schematic*

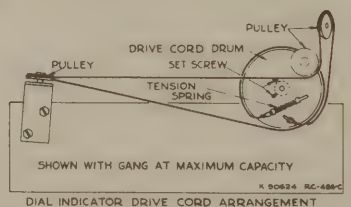
## Phonograph Information

For information regarding the automatic record changer refer to service note covering RP-139-A and RP-145 record changers. Model U-45 uses the RP-139-A mechanism.

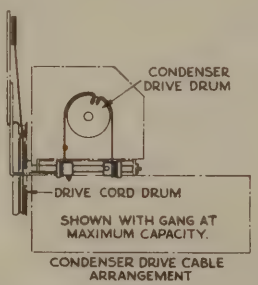



*Tube and Trimmer Locations*




DIAL INDICATOR DRIVE CORD ARRANGEMENT




CONDENSER DRIVE CABLE ARRANGEMENT

**Note:** Adjustment of the cam should be such that in "A" band position when push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

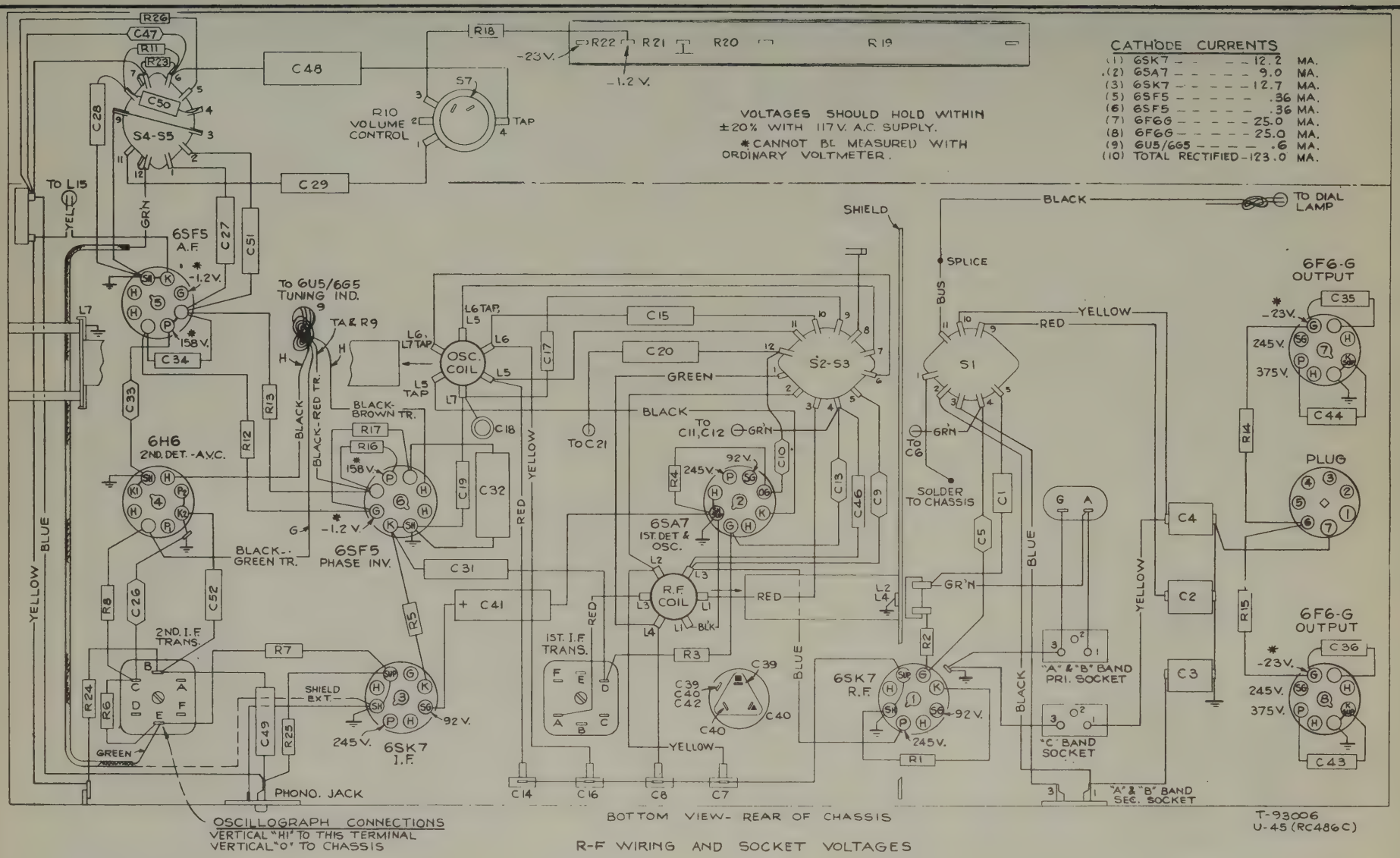
1. Remove station marker tabs; reach through tab holes in escutcheon with small screwdriver and loosen push-button rods.

2. Set the radio-phono switch to "radio" position and accurately tune in the station for which the first button is to be set.

3. Press in push-button rod No. 1 with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

4. Proceed in a similar manner for the remainder of the push-buttons.

5. Insert the station marker tabs in the recesses adjacent to the push-buttons.

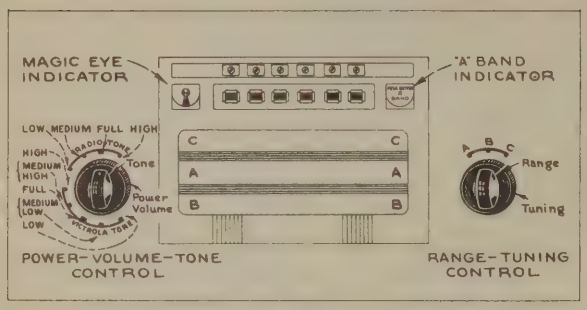



R-F WIRING AND SOCKET VOLTAGES

**Precautionary Lead Dress:**

1. A.C. leads at volume control dressed away from audio leads.
2. C-29 dressed close to chassis.
3. C-48 dressed under volume control.
4. Dress C-44 and 6F6-G plate leads away from antenna leads.
5. Leads to phono jack dressed close to end of chassis.
6. Red lead from R.F. coil to range switch short and direct as possible.
7. Leads to loop sockets dressed away from chassis and other leads.
8. Green lead from volume control arm to A.F. grid close to chassis.

## Alignment Procedure




*Controls*

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis wiring drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.** — For all alignment operations, keep the output as low as possible to avoid a-v-c action. For the first six steps in alignment the low side of the test-oscillator should be connected to the receiver chassis. Following step 6, the signal must be radiated (see alignment table).

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 240° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 240° mark on the calibration scale when the plates are fully meshed.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" band Quiet point near 600 kc | L10 and L11 (2nd I-F trans.) |
| 2 | 6SA7 det. grid in series with .01 mfd. | | | L8 and L9 (1st I-F trans.) |
| 3 | 6SK7 R-F grid in series with 0.1 mfd. | 15.2 mc | 15.2 mc (47°) "C" band | C14 (osc.)* C11 (det.)*** |
| 4 | | 3.44 mc | 3.44 mc (57°) "B" band | C16 (osc.)** C7 (det.) |
| 5 | | 600 kc | 600 kc (200°) "A" band | L7 (osc.) Rock gang |
| 6 | | 1,500 kc | 1,500 kc (22°) "A" band | C18 (osc.) C8 (det.) |
| 7 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 15.2 mc | 15.2 mc "C" band | C4 (ant.) |
| 8 | | 6.1 mc | 6.1 mc "C" band | Inductance of "C" band loop† |
| 9 | | Repeat step 7 | | |
| 10 | | 3.44 mc | 3.44 mc "B" band | C2 (ant.) |
| 11 | | 1,500 kc | 1,500 kc "A" band | C3 (ant.) |
| 12 | | 600 kc | 600 kc "A" band | L7 (osc.) Rock gang |
| 13 | | 1,500 kc | 1,500 kc "A" band | C18 (osc.) C8 (det.) |

**Note.**—For steps 7 to 13 inclusive the chassis must be in the cabinet, all loop leads connected and in their normal positions. The dial indicator pointer must be fastened to the drive cord in such a position that it is at the 530 kc mark on "A" scale when the gang condenser plates are fully meshed.

* Use **minimum** capacity peak if two can be obtained. Check to determine that C14 has been adjusted to the correct peak by tuning the receiver to approximately 14.29 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C16 has been adjusted to the correct peak by tuning the receiver to approximately 2.53 mc where a weaker signal should be received.

*** Use **maximum** capacity peak if two peaks can be obtained and rock gang condenser while adjusting.

† Adjust the inductance of "C" band loop by varying the spacing between the leads of the loop. Moving the leads closer together decreases the inductance and tunes the loop to a higher frequency; moving the leads farther apart increases the inductance and tunes the loop to a lower frequency.

**Important.**—The oscillator tracks **above** the signal on all bands.

# Replacement Parts MODEL U-44

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-486B)** |
| 33620 | Arm—Push arm and cam assembly on tuning unit less lock screw |
| 34785 | Board—"Antenna-ground" board |
| 33510 | Bracket—Drive cord pulleys and bracket (2 pulleys) |
| 34268 | Cap—Rubber cap for "Magic Eye" |
| 12714 | Capacitor—Air trimmer—2-12 mmfd. |
| 34784 | Capacitor—Trimmer comprising 1 section of 3-30 mmfd., 1 section of 2-20 mmfd., and 2 sections of 8-80 mmfd. |
| 34783 | Capacitor—Trimmer comprising 3 sections of 3-30 mmfd. each |
| 14079 | Capacitor—6.8 mmfd. (C1, C46) |
| 38779 | Capacitor—39 mmfd. (C19) |
| 12723 | Capacitor—56 mmfd. (C10) |
| 12813 | Capacitor—82 mmfd. (C9) |
| 12720 | Capacitor—100 mmfd. (C33, C47) |
| 34669 | Capacitor—100 mmfd. |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. (C26) |
| 12694 | Capacitor—220 mmfd. (C5, C13) |
| 31552 | Capacitor—680 mmfd. (C17) |
| 34787 | Capacitor—2,850 mmfd. (C15) |
| 31399 | Capacitor—4,700 mmfd. (C20) |
| 34459 | Capacitor—.0025 mfd. (C27, C29) |
| 33584 | Capacitor—.005 mfd. (C34, C35, C36, C43, C44) |
| 4937 | Capacitor—.01 mfd. (C49) |
| 11315 | Capacitor—.015 mfd. (C28) |
| 32787 | Capacitor—.05 mfd. (C31) |
| 30965 | Capacitor—0.25 mfd. (C32, C48) |
| 31323 | Capacitor—Electrolytic, 16 mfd. (C41) |
| 34533 | Capacitor—Electrolytic comprising 1 section of 20 mfd., 1 section of 15 mfd. and 1 section of 40 mfd. |
| 33508 | Clip—"Magic Eye" mounting clip and bracket |
| 34579 | Coil—Oscillator coil |
| 34697 | Coil—R.F. coil |
| 34780 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 32713 | Core—Core and stud for Oscillator coil |
| 33627 | Drum—Condenser drive drum |
| 34267 | Drum—Tuning condenser drive drum |
| 34779 | Gear—Gear and cam assembly located on range switch shaft |
| 34532 | Gear—Gear sector for range switch |
| 33185 | Gear—Volume control gear and hub with set screws |
| 33186 | Gear—Volume control knob shaft and gear |
| 11891 | Lamp—Dial lamp |
| 12493 | Plug—5 contact female plug for speaker cable |
| 14404 | Plug—7 contact male plug |
| 35005 | Pulley—Drive pulley less bronze drive cord |
| 33509 | Pulley—Tuning condenser drive cord pulley and support |
| 34537 | Resistor—Voltage divider—1 section of 3,000 ohms, 1 of 2,500 ohms, 1 of 10 ohms, and 1 of 170 ohms |
| 14439 | Resistor—100 ohms, ½ watt (R1, R5) |
| 14075 | Resistor—8,200 ohms, ½ watt (R24) |
| 13998 | Resistor—22,000 ohms, ½ watt (R6) |
| 12738 | Resistor—27,000 ohms, ½ watt (R11) |
| 12454 | Resistor—33,000 ohms, ½ watt (R4) |
| 12266 | Resistor—39,000 ohms, ½ watt (R17) |
| 12286 | Resistor—56,000 ohms, ½ watt (R25) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7) |
| 12199 | Resistor—270,000 ohms, ½ watt (R13, R16) |
| 13479 | Resistor—390,000 ohms, ½ watt (R14, R15) |
| 12486 | Resistor—560,000 ohms, ½ watt (R18, R23) |
| 13730 | Resistor—1 megohm, ½ watt (R3) |
| 12679 | Resistor—2.2 megohm, ½ watt (R2, R8, R12) |
| 34040 | Ring—Retaining ring for tuning shaft |
| 31611 | Screw—No. 8-32 milled head set screw for gear, Stock No. 33185 |
| 4669 | Screw—No. 8-32 square head set screw for drum, Stock No. 34267 and gear, Stock No. 34779 |
| 33621 | Screw—Push arm lock screw |
| 14350 | Screw—Square head set screw for gear, Stock No. 34532 |
| 34778 | Shaft—Range switch knob shaft |
| 34038 | Shaft—Tuning knob shaft with rubber drive roller and pulley assembled |
| 34575 | Socket—2-terminal loop sockets |
| 31365 | Socket—Insulated dial lamp socket |
| 31364 | Socket—Non-insulated dial lamp socket |
| 33514 | Socket—"Phono-Television" input socket |
| 31319 | Socket—Tube socket |
| 33544 | Spring—Drive cord spring |
| 33622 | Spring—Push arm return spring |
| 34042 | Spring—Spring and pin for range switch shaft |
| 33515 | Spring—Tension spring for spring and pin |
| 34781 | Switch—Range switch |
| 34782 | Switch—Tone control |
| 34698 | Transformer—First i-f transformer |
| 34524 | Transformer—Second i-f transformer |
| 33726 | Washer—"C" washer for spring and pin, Stock No. 34042 |
| 34037 | Washer—"C" washer for tuning shaft |
| | **POWER SUPPLY UNIT** |
| 11891 | Lamp—Pilot lamp |
| 30868 | Plug—2-contact female plug for motor cable |
| 14409 | Plug—Female plug for power supply to chassis cable |
| 31364 | Socket—Pilot lamp socket |
| 31251 | Socket—Tube socket |
| 34539 | Transformer—Power transformer 105-125 volts, 50-60 cycles |
| | **SPEAKER ASSEMBLIES (RL-70-K3)** |
| 31825 | Cap—Dust cap |
| 35170 | Coil—Speaker field coil |
| 34705 | Cone—Cone complete with voice coil |
| 34728 | Diffuser—Speaker diffuser |
| 31539 | Plug—5-prong male plug for speaker |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33474 | Button—Push button |
| 34791 | Dial—Glass dial scale |
| 33549 | Escutcheon—Dial and push button escutcheon, less screen and push buttons |
| 34789 | Frame—"C" band antenna loop frame only |
| 34792 | Gasket—Rubber gasket for motorboard |
| 4585 | Hinge—Cabinet door hinges |
| 30698 | Hinge—Cabinet lid hinge |
| 34790 | Indicator—Station selector indicator and carriage |
| 13103 | Jewel—Pilot lamp cap |
| 33470 | Knob—Range switch |
| 33553 | Knob—Tone control |
| 33471 | Knob—Tuning control |
| 33505 | Knob—Volume control |
| 34788 | Loop—"A" and "B" band antenna loop complete |
| 33842 | Marker—Push button station marker |
| 32641 | Plug—3-prong plug for antenna loop leads |
| 34794 | Pull—Door pull |
| 32427 | Receptacle—Packaged needle receptacle |
| 35129 | Screen—Compartment lamp screen |
| 33550 | Screen—"Push Button 'A' Band" marker screen |
| 34491 | Shaft—Pointer carriage guide rod |
| 30330 | Spring—Retaining spring for knob, Stock No. 33470 |
| 14270 | Spring—Retaining spring for knob, Stock No. 33553 and Stock No. 33471 |
| 4982 | Spring—Retaining spring for knob, Stock No. 33505 |
| 31470 | Spring—Spring mounting for motorboard |
| 34793 | Support—L.H. lid support |
| 34423 | Support—R.H. lid support |
| | For Record Changer mechanism refer to Service Notes and Parts Lists RP-139A and RP-145. |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 33551 | Frame — Dial frame complete with shaft supports, lamp bracket, pointer rod, pointer, less dial |
| 35942 | Rubber lining for phono compartment lid |
| 34693 | Transformer—Power transformer, 25 cycles, 110 volts |

# MODEL U-45

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-486C)** |
| 33620 | Arm—Push arm and cam assembly on tuning unit—less lock screw |
| 34785 | Board—"Antenna-ground" board |
| 33510 | Bracket—Drive cord pulleys and bracket (2 pulleys) |
| 34268 | Cap—Rubber cap for "Magic Eye" |
| 12714 | Capacitor—Air-trimmer, 2-12 mmfd. |
| 34784 | Capacitor—Trimmer, comprising 1 section of 3-30 mmfd., 1 section of 2-20 mmfd., and 2 sections of 8-80 mmfd. |
| 34783 | Capacitor—Trimmer, comprising 3 sections of 3-30 mmfd. each |
| 14079 | Capacitor—6.8 mmfd. (C1, C46) |
| 38779 | Capacitor—39 mmfd. (C19) |
| 12723 | Capacitor—56 mmfd. (C10) |
| 12813 | Capacitor—82 mmfd. (C9, C47) |
| 12720 | Capacitor—100 mmfd. (C33) |
| 13003 | Capacitor—180 mmfd. (C26) |
| 12694 | Capacitor—220 mmfd. (C5, C13) |
| 31552 | Capacitor—680 mmfd. (C17) |
| 34787 | Capacitor—2,850 mmfd. (C15) |
| 31399 | Capacitor—4,700 mmfd. (C20) |
| 33806 | Capacitor—.0015 mfd. (C51) |
| 34459 | Capacitor—.0025 mfd. (C29, C52) |
| 30303 | Capacitor—.0035 mfd. (C27) |
| 33584 | Capacitor—.005 mfd. (C34, C35, C36, C43, C44) |
| 11315 | Capacitor—.015 mfd. (C28, C49) |
| 4870 | Capacitor—.025 mfd. (C50) |
| 32787 | Capacitor—.05 mfd. (C31) |
| 30965 | Capacitor—0.25 mfd. (C32, C48) |
| 31323 | Capacitor—Electrolytic, 16 mfd. (C41) |
| 34533 | Capacitor—Electrolytic, comprising 1 section of 20 mfd., 1 section of 15 mfd. and 1 section of 40 mfd. |
| 33508 | Clip—"Magic Eye" mounting clip and bracket |
| 35687 | Coil—Choke coil |
| 34579 | Coil—Oscillator coil |
| 34697 | Coil—R.F. coil |
| 35686 | Control—Tone control |
| 34780 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 32713 | Core—Core and stud for oscillator coil |
| 33627 | Drum—Condenser drive drum |
| 34267 | Drum—Tuning condenser drive drum |
| 34779 | Gear—Gear and cam assembly located on range switch shaft |
| 34532 | Gear—Gear sector for range switch |
| 33185 | Gear—Volume control gear and hub with set screws |
| 33186 | Gear—Volume control knob shaft and gear |
| 11891 | Lamp—Dial lamp |
| 12493 | Plug—5-contact female plug for speaker cable |
| 14404 | Plug—7-contact male plug |
| 35005 | Pulley—Drive pulley—less bronze drive cord |
| 33509 | Pulley—Tuning condenser drive cord pulley and support |
| 34537 | Resistor—Voltage divider—1 section of 3,000 ohms, 1 of 2,500 ohms, 1 of 10 ohms, and 1 of 170 ohms |
| 14439 | Resistor—100 ohms, ½ watt (R1, R5) |
| 14499 | Resistor—1,500 ohms, ½ watt (R24) |
| 13998 | Resistor—22,000 ohms, ½ watt (R6, R26, R27) |
| 12738 | Resistor—27,000 ohms, ½ watt (R11) |
| 12454 | Resistor—33,000 ohms, ½ watt (R4) |
| 12266 | Resistor—39,000 ohms, ½ watt (R17) |
| 13715 | Resistor—68,000 ohms, ½ watt (R25) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7) |
| 12199 | Resistor—270,000 ohms, ½ watt (R13, R16) |
| 13479 | Resistor—390,000 ohms, ½ watt (R14, R15) |
| 12486 | Resistor—560,000 ohms, ½ watt (R18, R23) |
| 12013 | Resistor—1 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt (R3) |
| 12679 | Resistor—2.2 meg., ½ watt (R2, R8, R12) |
| 34040 | Ring—Retaining ring for tuning shaft |
| 31611 | Screw—No. 8-32 milled head set screw for gear, Stock No. 33185 |
| 14350 | Screw—No. 8-32 sq. hd. set screw for drum, Stock No. 34267, and gears, Stock Nos. 34779 and 34532 |
| 33621 | Screw—Push arm lock screw |
| 34778 | Shaft—Range switch knob shaft |
| 34038 | Shaft—Tuning knob shaft with rubber drive roller and pulley, assembled |
| 34575 | Socket—2-terminal loop sockets |
| 31365 | Socket—Insulated dial lamp socket |
| 31364 | Socket—Non-insulated dial lamp socket |
| 33742 | Socket—"Phono" input socket |
| 34864 | Socket—Tuning indicator socket |
| 31319 | Socket—Tube socket |
| 33544 | Spring—Drive cord spring |
| 33622 | Spring—Push arm return spring |
| 34042 | Spring—Spring and pin for range switch shaft |
| 33515 | Spring—Tension spring for spring and pin |
| 34781 | Switch—Range switch |
| 34698 | Transformer—First i-f transformer |
| 34524 | Transformer—Second i-f transformer |
| 34693 | Transformer—Power transformer, 110 volts, 25 cycle |
| 33726 | Washer—"C" washer for spring and pin, Stock No. 34042 |
| 34037 | Washer—"C" washer for tuning shaft |
| | **RECORD CHANGER PARTS** |
| | Same as RP-139A |
| | **POWER SUPPLY ASSEMBLIES** |
| 11891 | Lamp—Indicator lamp |
| 30868 | Plug—2-contact female plug for motor lead |
| 14409 | Plug—7-contact female plug for power input cable |
| 31364 | Socket—Indicator lamp socket |
| 31251 | Socket—Tube socket |
| 34693 | Transformer—Power transformer—110 volts, 25 cycle |
| 34539 | Transformer—Power transformer—110 volts, 60 cycle |
| | **SPEAKER ASSEMBLIES (RL-70K6)** |
| 13867 | Cap—Dust cap |
| 35170 | Coil—Field coil |
| 35616 | Cone—Cone, complete with voice coil |
| 34728 | Diffuser—Speaker diffuser |
| 31539 | Plug—5-prong male speaker plug |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 34994 | Button—Push button |
| 13103 | Cap—Pilot lamp cap |
| 35743 | Decalcomania—Band switch decal |
| 35468 | Decalcomania—Caution decal. for record changer |
| 35744 | Decalcomania—"Power-Volume" decal. |
| 35467 | Decalcomania—"RCA-Victrola" decal. |
| 35741 | Decalcomania—"RCA-Victrola" decal. |
| 35393 | Decalcomania—"Television" decal. |
| 35691 | Dial—Glass dial scale |
| 35455 | Escutcheon—Dial scale and push button escutcheon—less scale and buttons |
| 35690 | Frame—Dial frame, complete—less dial scale, pointer and pointer guide rods |
| 34789 | Frame—Frame only for "C" band loop |
| 34792 | Gasket—Rubber gasket for motorboard |
| 4585 | Hinge—1 set of bottom door hinges |
| 34871 | Hinge—Top door hinge—L. H. |
| 34870 | Hinge—Top door hinge—R. H. |
| 34790 | Indicator—Station selector indicator and carriage |
| 35458 | Knob—Range switch knob |
| 35459 | Knob—Tone control knob |
| 35460 | Knob—Tuning knob |
| 35461 | Knob—Volume control and power switch knob |
| 5117 | Lamp—Compartment lamp |
| 35689 | Loop—"A" and "B" band antenna loop, complete |
| 33842 | Markers—Station selector markers |
| 31470 | Mounting—Motorboard spring mounting |
| 34990 | Plug—2-prong male plug for "C" band loop |
| 32641 | Plug—3-prong male plug for "A" and "B" band loops |
| 35042 | Pull—Door pull |
| 32427 | Receptacle—Packaged needle holder |
| 33550 | Screen—"Push Button 'A' Band" marker screen |
| 35688 | Shade—Compartment lamp shade |
| 34491 | Shaft—Pointer guide shaft |
| 31364 | Socket—Compartment lamp socket |
| 4982 | Spring—Retaining spring for knob, Stock No. 35461 |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 35459 and 35460 |
| 30330 | Spring—Retaining spring for knob, Stock No. 35458 |

# Model 45E Series

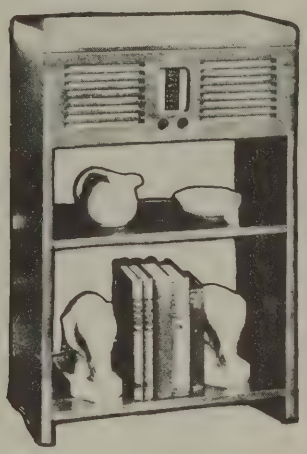
## Chassis No. RC-435A

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver

*Model 45E Maple Finish*

*Model 45E-M Mahogany Finish*

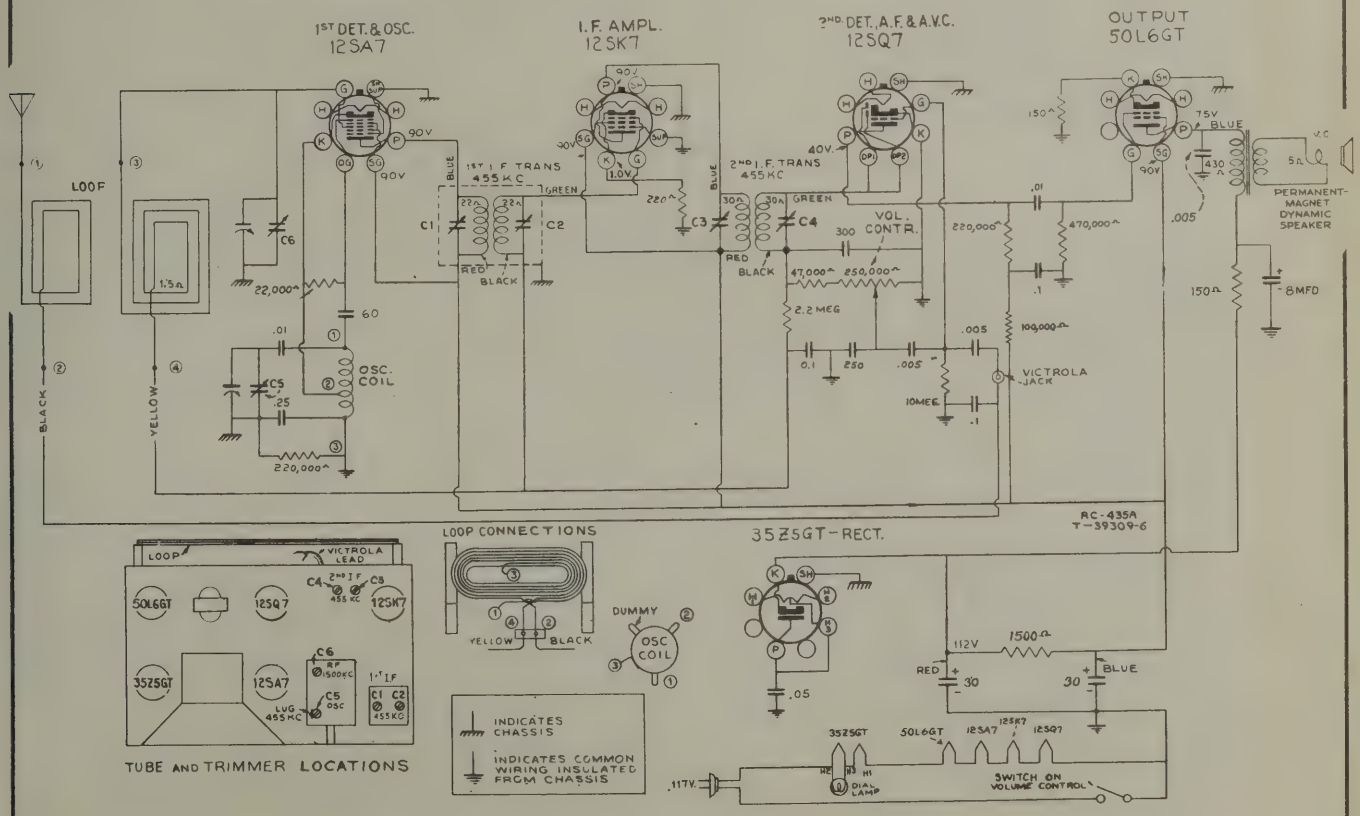
*Model 45E-W Walnut Finish*



### Electrical and Mechanical Specifications

| | |
|---|---|
| FREQUENCY RANGE | 540-1,720 kc |
| Intermediate Frequency | 455 kc |
| **TUBE COMPLEMENT** | |
| (1) RCA-12SA7 | 1st-Detector-Oscillator |
| (2) RCA-12SK7 | I-F Amplifier |
| (3) RCA-12SQ7 | 2nd-Detector, 1st A-F, and A.V.C. |
| (4) RCA-50L6GT | Power Output |
| (5) RCA-35Z5GT | Half-Wave Rectifier |
| Dial Lamp (1) | Mazda 51, 7.5 volts, 0.2 amp. |

| | |
|---|---|
| **POWER SUPPLY RATINGS** | |
| A-C Rating | 105-125 volts, 50-60 cycles, 30 watts |
| D-C Rating | 105-125 volts, direct current, 30 watts |
| **POWER OUTPUT (125 volt, 60 cycle supply)** | |
| Undistorted | .6 watts |
| Maximum | 2.0 watts |
| **LOUDSPEAKER** | |
| Type | 5-inch permanent magnet dynamic |
| Cabinet Dimensions (inches) | Height 25⅝, Width 16, Depth 10 |
| Weight (net) | 17 pounds |




*Schematic Circuit Diagram*

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that top edge of pointer just touches rivet in dial plate.

**Antenna.**—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

**Victrola Attachment.**—A jack is provided on the rear of cabinet for connecting a Victrola Attachment into the audio-amplifying circuit. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | Tuning condenser stator (osc.) in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna term. of ant. loop in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C6 (antenna) |

### Precautionary Lead Dress

1. Dress 2nd I-F green lead close to chassis and under other parts.
2. Dress lead from gang condenser to grid of 12SA7 close to chassis and away from 12SQ7 socket.
3. Dress blue 1st I-F lead under volume control close to chassis.
4. Dress blue 2nd I-F lead close to chassis and behind 12SK7 socket.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| Stock No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 13057 | Capacitor—60 mmfd. |
| 12488 | Capacitor—250 mmfd. |
| 12952 | Capacitor—300 mmfd. |
| 4838 | Capacitor—.005 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 33952 | Capacitor—Electrolytic, 8 mfd. |
| 33850 | Capacitor—Electrolytic, 2 sections 30 mfd. each |
| 34259 | Coil—Oscillator coil |
| 32968 | Condenser—Variable tuning condenser |
| 32634 | Cord—Drive cord |
| 33662 | Drum—Drive drum |
| 33295 | Indicator—Dial pointer |
| 11765 | Lamp—Dial lamp |
| 33663 | Loop—Antenna loop complete |
| 33294 | Pulley—Drive cord pulley |
| 13428 | Resistor—150 ohms, ½ watt |
| 14561 | Resistor—220 ohms, ½ watt |
| 3153 | Resistor—1,500 ohms, 1 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 33293 | Shaft—Tuning knob shaft and bushing |
| 33557 | Socket—Dial lamp socket |
| 32537 | Socket—Tube socket |
| 31615 | Spring—Drive cord spring |
| 33296 | Spring—Retaining spring for drum |
| 32966 | Transformer—First I-F transformer |
| 32967 | Transformer—Second I-F transformer |
| 33291 | Volume control and switch |
| | **SPEAKER ASSEMBLIES (39213-1)** |
| 33853 | Cone—Speaker cone and voice coil |
| 33851 | Speaker complete |
| 33854 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33852 | Dial—Glass dial scale |
| 34015 | Knob—Volume or tuning knob—Models 45EM, 45EW only |
| 34016 | Knob—Volume or tuning knob—Model 45E only |
| 34043 | Spring—Retaining spring for knobs Stk. 34015 and 34016 |

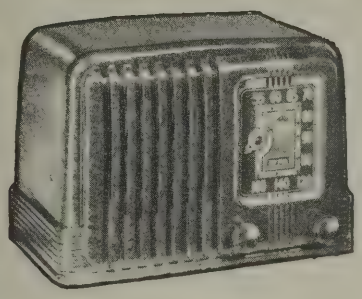
**Additional Replacement Part:**

Stock No.
33139 Rubber grommet for dial shaft.....

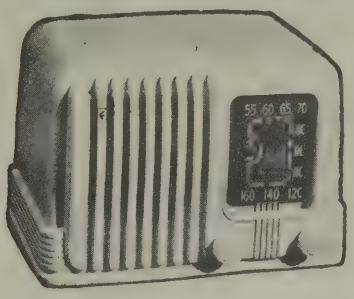
# Models 45X, 45X11, 45X12 and 45X13

| Chassis No. | RC-459L | RC-459 | RC-459 | RC-459A |
|---|---|---|---|---|
| 2ND PROD. | | RC-459D | RC-459D | RC-459E |
| 3RD PROD. | | RC-459T | RC-459T | |

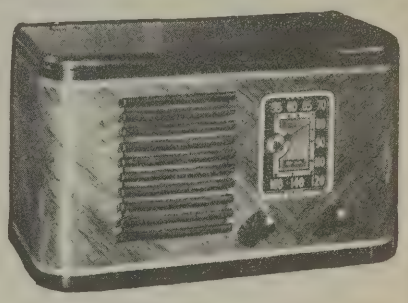
## Five-Tube, Single-Band, AC-DC Superheterodyne Receivers



*Model 45X-11*



*Model 45X-12*



*Model 45X-13*

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,600 kc

Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Rectifier
Dial Lamp (1) ..... Mazda 51, 7.5 volts, .2 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted ..... 1.0 watts
Maximum ..... 1.5 watts

LOUDSPEAKER

Type ..... 5-inch Electrodynamic

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that pointer is vertical.

**Antenna.**—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 (I-F) grid in series with .01 mfd. | 455 kc | Quiet point at 600 kc end of dial | C8, C9 (2nd I-F trans.) |
| 2 | Tuning condenser stator (ant.) in series with .01 mfd. | | | C6, C7 (1st I-F trans.) |
| 3 | Radiation loop consisting of two turns of wire 18 inches in diameter | 1,600 kc | Full clockwise (out of mesh) | C3 (oscillator) |
| 4 | | 1,400 kc | Resonance on 1,400 kc signal | C1 (antenna) |

### Precautionary Lead Dress

1. Audio coupling capacitor to volume control must be dressed under the terminal board and down against the corner of the chassis.

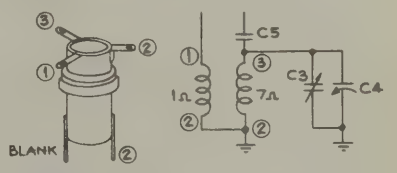
2. The voice coil leads from the output transformer to the speaker must be dressed away from the terminal on the terminal-board to which the above audio coupling capacitor is connected.

3. The output tube bypass condenser must be dressed away from the 12SQ7 tube.

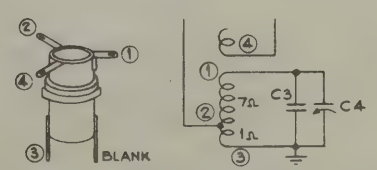
*Model 45X (RC-459L).*

### Oscillator Coil Connections:

The oscillator coil in the 2nd production of these models is different from the 1st production: The correct connections are shown below. Note that when installing a No. 34443 coil, it is necessary to connect a jumper from the bottom lug No. 2 to the top lug No. 2.

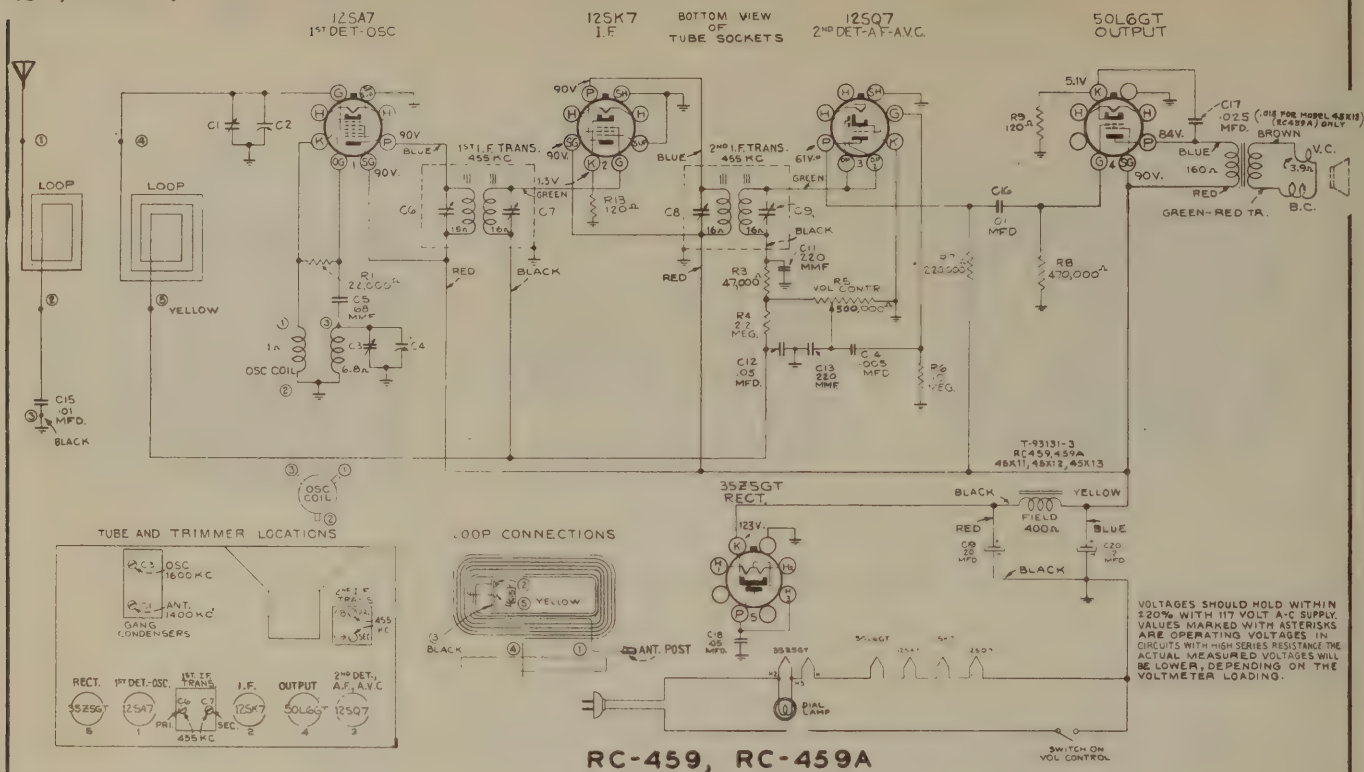



STOCK NO. 34443 OSC. COIL
USED IN FIRST PRODUCTION 45X11,12,13
(RC 459 AND 459A)




STOCK NO. 35579 OSC. COIL
USED IN SECOND PRODUCTION 45X11,12,13
(RC459D AND 459E)

# 45X, 45X11, -12, -13,




## RC-459, RC-459A

**Microphonic Howl:**

Vibration of parts in the oscillator circuit may cause microphonic howl, which can be corrected by the following:

(a) See that the drive pulley does not touch the dial.
(b) Squeeze in the rear of the gang condenser frame, in order to center the rotor plates within the stator.
(c) Loosen the tuning condenser mounting screws slightly to ensure free floating of the gang.

## MODELS 45X-11, -12, -13

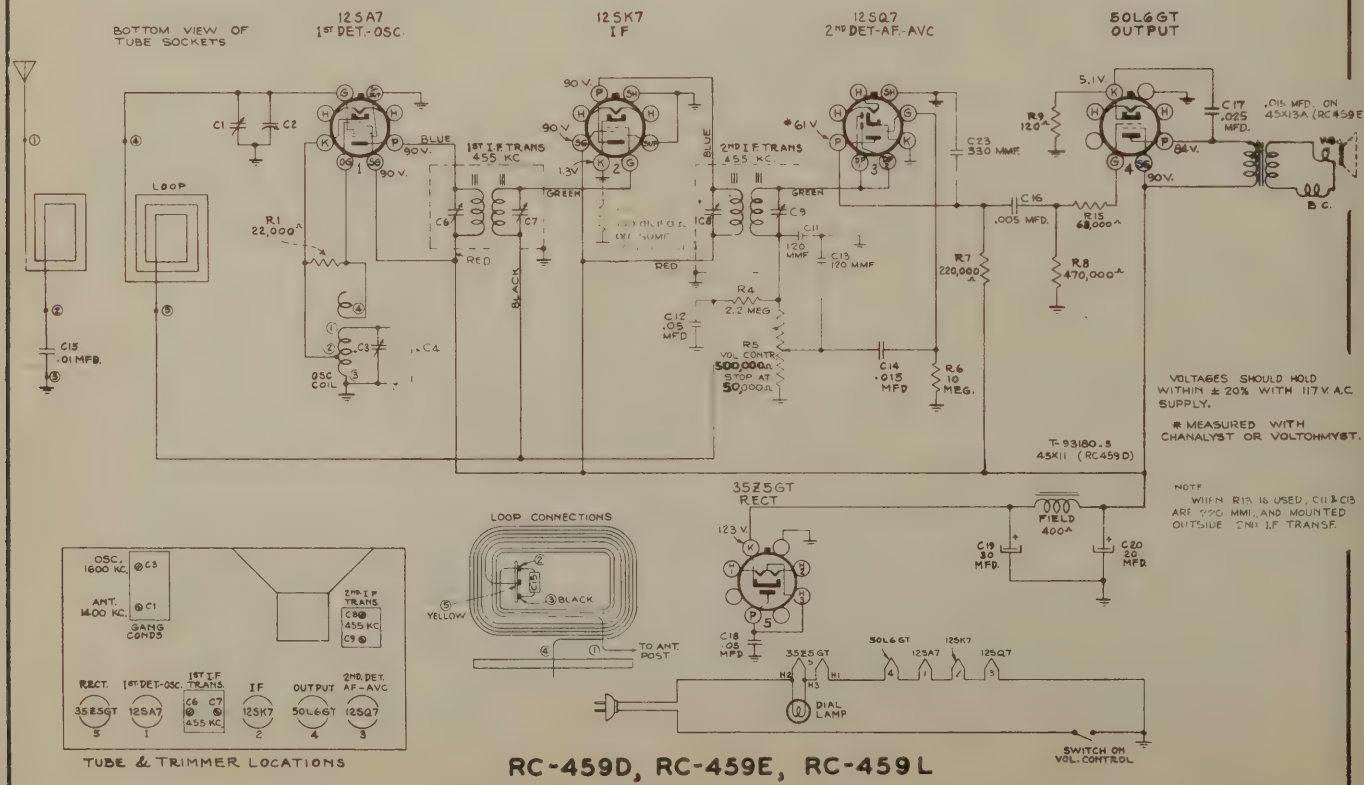
Two changes have been made in 2nd Production:

(a) C-13 is connected to the grid of the 12SQ7 instead of to the arm of the volume control, to provide more effective I-F filtering.
(b) Diode plate No. 1 is connected to chassis instead of to diode plate No. 2, to reduce residual hum.

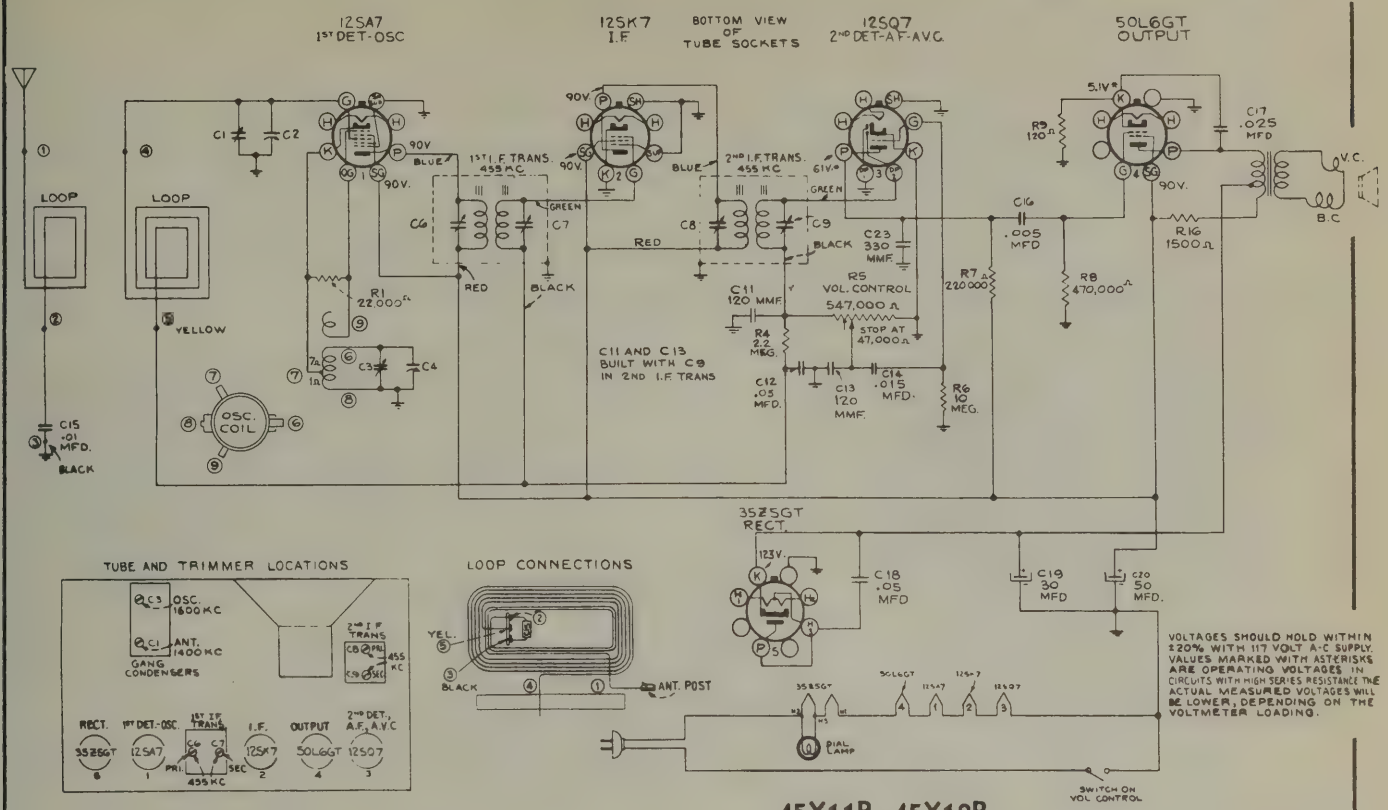
## 45X11, 12, 13 (2nd Prod.)

**Circuit Revisions:**

(a) R15 eliminated and a connection made from C16 direct to the 50L6GT grid.
(b) Terminal DP1 (1st diode plate) of tube 12SQ7 (2nd Det.-A.F.-AVC) connected direct to ground instead of to its illustrated connection.




## RC-459D, RC-459E, RC-459L




**45X11B, 45X12B**
**(RC-459T)**

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-459) (RC-459A)** |
| 13057 | Capacitor—68 mmfd. (C5) |
| 12694 | Capacitor—220 mmfd. (C11, C13) |
| 33584 | Capacitor—.005 mfd. (C14) |
| 4937 | Capacitor—.01 mfd. (C15, C16) |
| 11315 | Capacitor—.015 mfd. (C17) (RC-459A) |
| 30938 | Capacitor—.025 mfd. (C17) (RC-459) |
| 32787 | Capacitor—.05 mfd. (C12) |
| 32576 | Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 12 mfd. |
| 34443 | Coil—Oscillator coil |
| 35053 | Condenser—Variable tuning condenser less drive drum |
| 35057 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 35063 | Drum—Tuning condenser drive drum |
| 35062 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 35061 | Loop—Antenna loop complete |
| 12071 | Resistor—120 ohms, ½ watt (R13) |
| 32535 | Resistor—120 ohms, ½ watt (R9) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 12412 | Resistor—47,000 ohms, ½ watt (R3) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12679 | Resistor—2.2 megohms, ½ watt (R4) |
| 13601 | Resistor—10 megohms, ½ watt (R6) |
| 35059 | Scale—Dial scale |
| 35058 | Shaft—Tuning condenser drive shaft |
| 34449 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord tension spring |
| 35056 | Transformer—Output transformer |
| 35054 | Transformer—1st I.F. transformer |
| 35055 | Transformer—2nd I.F. transformer |
| | **SPEAKER ASSEMBLIES (39223-2)** |
| 35065 | Cone—Cone complete with voice coil |

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (RL 86-2)** |
| 32907 | Cap—Dust cap |
| 35066 | Cone—Cone complete with voice coil |
| 34450 | Speaker—5-inch dynamic speaker complete with cone and voice coil less output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35068 | Back—Cabinet back for Model 45X11 |
| 35070 | Back—Cabinet back for Model 45X12 |
| 35072 | Back—Cabinet back for Model 45X13 |
| 35079 | Crystal—Dial scale crystal for Models 45X11, 45X12 |
| 35067 | Crystal—Dial scale crystal for Model 45X13 |
| 35069 | Fastener—1 set Push Fastener for crystal on Models 45X11, 45X12 |
| 35078 | Knob—Light mahogany tuning or volume control knob for Model 45X11 |
| 35071 | Knob—Ivory tuning or volume control knob Model 45X12 |
| 30863 | Knob—Walnut tuning or volume control knob Model 45X13 |
| 30900 | Spring—Retaining spring for knobs Stock No. 30863, 35071 and 35078 |
| | **Additional Replacement Parts:** |
| | Stock No. |
| 33317 | Fastener—Push fastener for cabinet back (45X-11, 45X-12) |
| 31993 | Plate—Dial scale mounting plate |
| 11909 | Spring—Spring and fibre washer to take up play in drive shaft |

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | Model 45X-11, RC-459D<br>Model 45X-12, RC-459D<br>Model 45X-13, RC-459E |
| 35097 | Can—Shield can for I-F transformers, Stock Nos. 35346, 35347 |
| 12694 | Capacitor—220 mmfd. (C11, C13) |
| 33584 | Capacitor—.005 mfd. (C16) |
| 4937 | Capacitor—.01 mfd. (C15) |
| 11315 | Capacitor—.015 mfd. (C14) (C17 for Model 45X-13) |
| 30938 | Capacitor—.025 mfd. (C17 for Models 45X-11, 45X-12) |
| 32787 | Capacitor—.05 mfd. (C12, C18) |
| 35348 | Capacitor—Electrolytic, comprising 1 section of 30 mfd. and 1 section of 20 mfd. (C19, C20). |
| 35579 | Coil—Oscillator coil |
| 35534 | Condenser—Variable tuning condenser |
| 35344 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 35059 | Dial—Dial scale |
| 35063 | Drum—Tuning condenser drive drum |
| 35062 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 35061 | Loop—Antenna loop complete |
| 14439 | Resistor—100 ohms, ½ watt (R13) (45X-13) |
| 35993 | Plate—Dial scale mounting plate |
| 30189 | Resistor—120 ohms, ½ watt (R9) |
| 13428 | Resistor—150 ohms, ½ watt (R13) (45X-11, -12) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 13715 | Resistor—68,000 ohms, ½ watt (R15) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R6) |
| 35343 | Shaft—Tuning condenser drive shaft |
| 35345 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I-F transformers in can |
| 35346 | Transformer—First I-F transformer—less shield can |
| 35347 | Transformer—Second I-F transformer—less shield can |
| 35056 | Transformer—Output transformer |
| 34373 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (39223-502)** |
| 35065 | Cone—Cone complete with voice coil |
| | **SPEAKER ASSEMBLIES (RL86-2)** |
| 32907 | Cap—Dust cap |
| 35066 | Cone—Cone complete with voice coil |
| 34450 | Speaker—5-inch dynamic speaker complete with cone and voice coil—less output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35068 | Back—Cabinet back for Model 45X-11 |
| 35070 | Back—Cabinet back for Model 45X-12 |
| 35072 | Back—Cabinet back for Model 45X-13 |
| 35079 | Escutcheon—Dial scale escutcheon and crystal for Models 45X-11, 45X-12 |
| 35067 | Escutcheon—Dial scale escutcheon and crystal for Model 45X-13 |
| 33317 | Fastener—Push-on fastener for cabinet back for Models 45X-11, 45X-12 |
| 35069 | Fastener—Push-on fastener for crystal for Models 45X-11, 45X-12 |
| 35071 | Knob—Ivory tuning or volume control knob for Model 45X-12 |
| 35078 | Knob—Light mahogany tuning or volume control knob for Model 45X-11 |
| 30863 | Knob—Walnut tuning or volume control knob for Model 45X-13 |
| 30900 | Spring—Retaining spring for knobs, Stock Nos. 30863, 35071, 35078 |

## MODEL 45X, RC-459L

**Technical Information and Service Data:**

Model 45X (RC-459L) is similar to 2nd production Model 45X-13 (RC-459E), except for the following replacement parts used in Model 45X:

| STOCK No. | DESCRIPTION |
|---|---|
| 35072 | Back—Cabinet back |
| 35912 | Dial—Dial scale, 45X |
| 35067 | Escutcheon — Dial scale escutcheon and crystal |
| 30863 | Knob—Walnut tuning or volume control knob |
| 30900 | Spring—Retaining spring for knob, Stock No. 30863 |
| 11309 | Spring—Spring and fibre washer to take up play on drive shaft |

**Service Data for the 2nd production Models 45X-11, -12, -13 (RC-459D and RC-459E) applies to Model 45X.**

## MODELS 45X-11B, -12B
## RC-459T

**CHASSIS ASSEMBLIES**

| STOCK No. | DESCRIPTION |
|---|---|
| 12952 | Capacitor—330 mmfd., moulded |
| 33584 | Capacitor—.005 mfd., 1200 volts, tubular |
| 4937 | Capacitor—.01 mfd., 1000 volts, tubular |
| 11315 | Capacitor—.015 mfd., 400 volts, tubular |
| 30938 | Capacitor—.025 mfd., 400 volts, tubular |
| 32787 | Capacitor—.05 mfd., 400 volts, tubular |
| 36301 | Capacitor—Electrolytic, comprising 1 section of 30 mfd. and 1 section of 50 mfd. |
| 35579 | Coil—Oscillator Coil |
| 35534 | Condenser—Variable Tuning Condenser |
| 35344 | Control—Volume Control and Power Switch |
| 32634 | Cord—Tuning Condenser Drive Cord |
| 11765 | Lamp—Dial Lamp |
| 37366 | Loop—Antenna Loop Complete |
| 35993 | Plate—Dial Scale Mounting Plate |
| 35062 | Pointer—Scale Pointer |
| 32535 | Resistor—120 ohms, ½ watt, Flexible Resistor |
| 3153 | Resistor—1500 ohms, 1 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 35059 | Scale—Dial Scale |
| 35343 | Shaft—Tuning Condenser Drive Shaft |
| 35332 | Shield—Shield Can for Stock No. 37364 |
| 35345 | Socket—Dial Lamp Socket |
| 31319 | Socket—Tube Socket, 8 Pin Moulded with Metal Plate |
| 31251 | Socket—Tube Socket, 8 Pin Wafer Type |
| 31418 | Spring—Drive Cord Tension Spring |
| 34373 | Washer—"C" Washer for Drive Shaft |
| 36232 | Transformer—First I.F. Transformer |
| 37364 | Transformer—Second I.F. Transformer |
| 35666 | Transformer—Output Transformer |
| | **SPEAKER ASSEMBLIES RL 81B2** |
| 35570 | Cone—Cone Complete with Voice Coil |
| 37612 | Speaker—5-inch permanent magnet speaker complete with cone and voice coil—less output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35068 | Back—Cabinet Back for Model 45X11B |
| 35070 | Back—Cabinet Back for Model 45X12B |
| 35079 | Crystal—Dial Scale Crystal |
| 35069 | Fastener—1 set of Fasteners for Crystal |
| 35071 | Knob—Ivory Tuning or Volume Control |
| 35078 | Knob—Light Mahogany Tuning or Volume Control |
| 30900 | Spring—Retaining Spring for Knobs Stock No. 35071 and No. 35078 |

# Models 45X1, 45X2, 45X3, 45X4

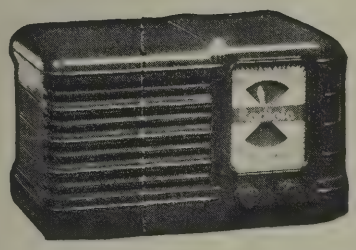
Chassis No. RC-457 RC-457E

2ND PROD. RC-457A

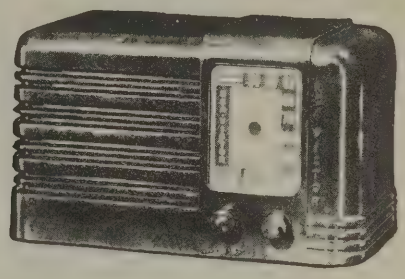
AND RADIOLA 500 & 501

RC-464

## Five-Tube, Single-Band, AC-DC Superheterodyne Receivers



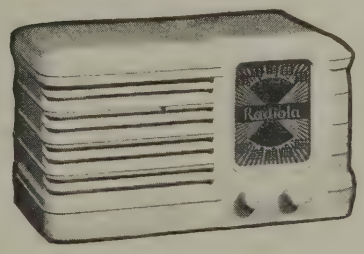
← *Radiola 500*
*Walnut Finish Plastic Cabinet*

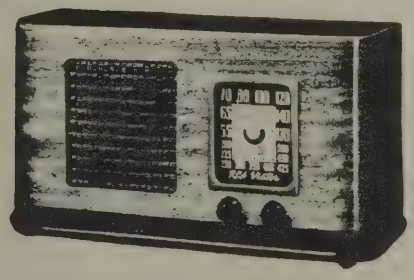


*Model 45X1*
*Walnut Finish Plastic Cabinet*

*Model 45X2*
*Ivory Finish Plastic Cabinet*

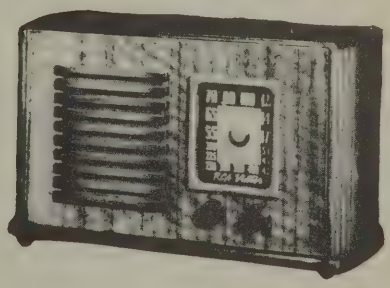
*Radiola 501* →
*Ivory Finish Plastic Cabinet*



*At Left—*
*Model 45X3*

*At Right—*
*Model 45X4*



## Electrical and Mechanical Specifications

FREQUENCY RANGE... RC-457 ONLY ..... 540-1,680 kc

FREQUENCY RANGE..... 535-1,720 kc

Intermediate Frequency..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7..... 1st-Detector-Oscillator
(2) RCA-12SK7..... I-F Amplifier
(3) RCA-12SQ7..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-50L6GT..... Power Output
(5) RCA-35Z5GT..... Half-Wave Rectifier

Dial Lamp (1)..... Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS

A-C Rating..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted..... .6 watts
Maximum..... 2.0 watts

LOUDSPEAKER

Type..... 4-inch Electrodynamic
Voice-coil impedance at 400 cycles..... 4 ohms

## Alignment Procedure

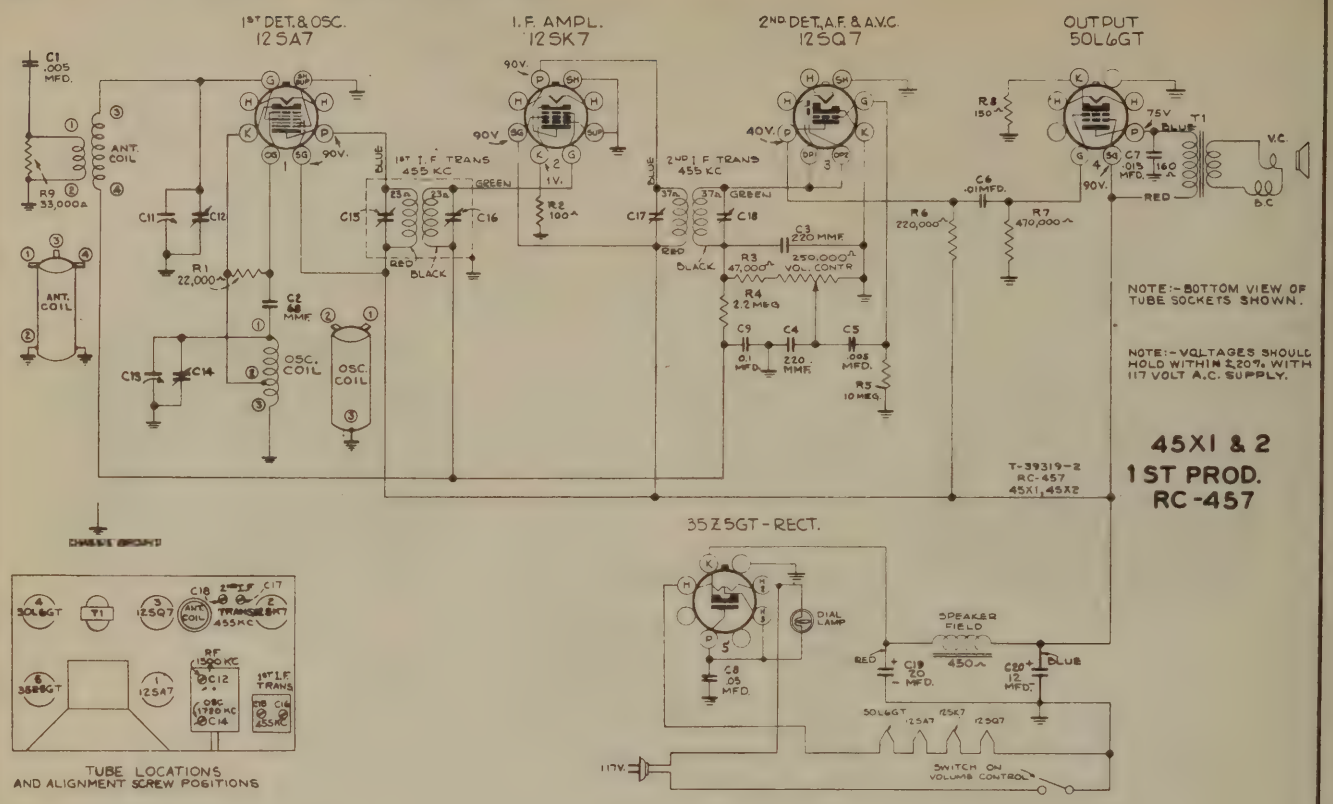
**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 grid in series with .001 mfd. | 455 kc | Quiet Point at 1,600 kc end of dial | C17, C18 (2nd I-F Trans.) |
| 2 | 12SA7 grid in series with .001 mfd. | | | C15, C16 (1st I-F Trans.) |
| 3 | Antenna term. of ant. trans. in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C14 (oscillator) |
| 4 | | 1,500 kc | Resonance on 1,500 kc signal | C12 (antenna) |

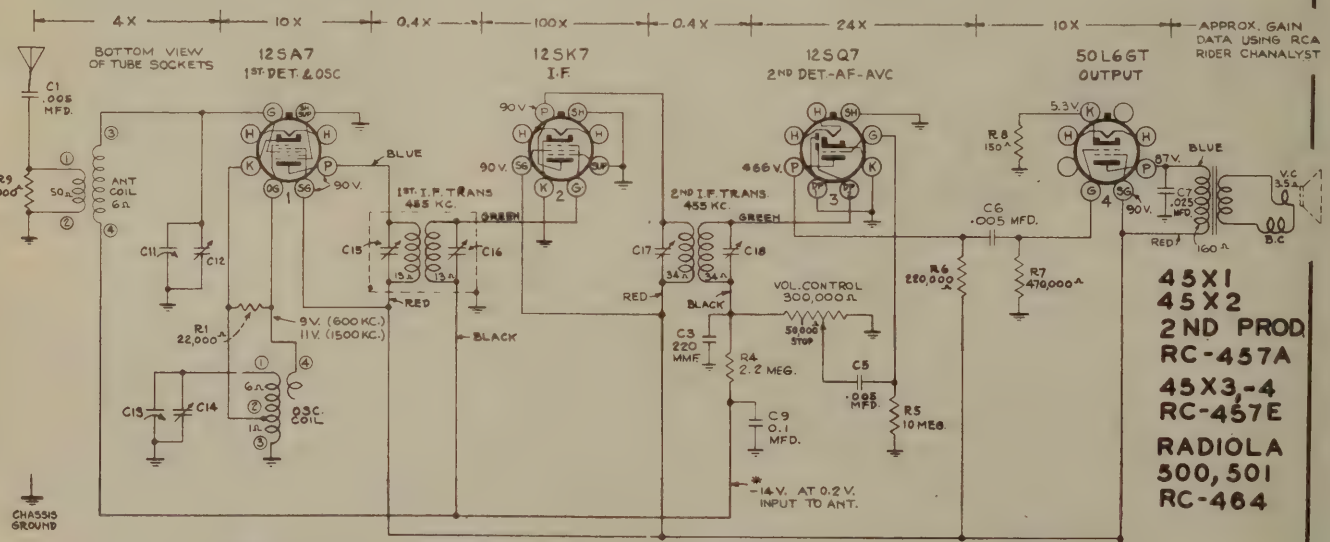
# 45X-1, -2, -3, -4, RADIOLA 500, 501



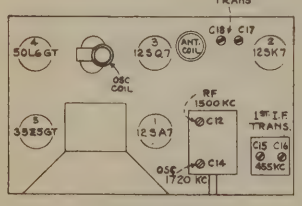

**45X1 & 2**
**1ST PROD.**
**RC-457**



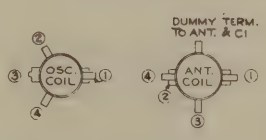

TUBE LOCATIONS
AND ALIGNMENT SCREW POSITIONS



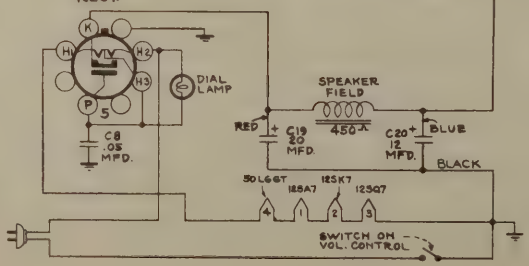

**45X1**
**45X2**
**2ND PROD.**
**RC-457A**
**45X3,-4**
**RC-457E**
**RADIOLA**
**500, 501**
**RC-464**




TUBE LOCATIONS
& ALIGNMENT SCREW POSITIONS




VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.




## 45X-1, 45X-2

**Changes in 2nd Production:**

The AVC filter resistor R4 is changed from 2.2 to 3.3 megs., Stock No. 12928.

The output tube bias resistor, R8, is changed from 150 to 120 ohms, Stock No. 30189.

45X -1, -2, -3, -4, RADIOLA 500, 501

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

## MODELS 45X-1, 45X-2 (RC-457)

### CHASSIS ASSEMBLIES

| STOCK No. | DESCRIPTION |
|---|---|
| 13057 | Capacitor—68 mmfd. (C2) |
| 12694 | Capacitor—220 mmfd. (C3, C4) |
| 33584 | Capacitor—.005 mfd. (C1, C5) |
| 4937 | Capacitor—.01 mfd. (C6) |
| 30856 | Capacitor—.015 mfd. (C7) |
| 32787 | Capacitor—.05 mfd. (C8) |
| 4839 | Capacitor—0.1 mfd. (C9) |
| 32576 | Capacitor—Electrolytic comprising 1 section of 20 mfd and 1 section of 12 mfd. |
| 35115 | Coil—Antenna coil |
| 35116 | Coil—Oscillator coil |
| 34843 | Condenser—Variable tuning condenser |
| 35113 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35117 | Drum—Tuning condenser drive drum |
| 11765 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 14439 | Resistor—100 ohms, ½ watt (R2) |
| 30880 | Resistor—150 ohms, ½ watt (R8) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 12412 | Resistor—47,000 ohms, ½ watt (R3) |
| 12264 | Resistor—220,000 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 12679 | Resistor—2.2 megohms, ½ watt (R4) |
| 13601 | Resistor—10 megohms, ½ watt (R5) |
| 33305 | Shaft—Condenser drive shaft |
| 35118 | Shield—Shield can for I.F. transformer Stock No. 35114 |
| 32969 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord tension spring |
| 34846 | Transformer—Audio transformer |
| 35114 | Transformer—1st I.F. transformer |
| 33301 | Transformer—2nd I.F. transformer |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 12454 | Resistor—33,000 ohms, ½ watt (R9) |
| 31251 | Socket—Tube socket |
| 11909 | Spring—Spring and fibre washer to take up play in drive shaft |

### CHASSIS ASSEMBLIES (RC-457A)

| | |
|---|---|
| 35332 | Can—I.F. transformer shield can |
| 12694 | Capacitor—220 mmfd. (C3) |
| 33584 | Capacitor—.005 mfd. (C1, C5, C6) |
| 4870 | Capacitor—.025 mfd. (C7) |
| 32787 | Capacitor—.05 mfd. (C8) |
| 4839 | Capacitor—0.1 mfd. (C9) |
| 32576 | Capacitor—Electrolytic, comprising 1 section of 20 mfd. and 1 section of 12 mfd. |
| 35115 | Coil—Antenna coil |
| 35333 | Coil—Oscillator coil |
| 34843 | Condenser—Variable tuning condenser |
| 35330 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35117 | Drum—Tuning condenser drive drum |
| 11765 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 30880 | Resistor—150 ohms, ½ watt (R8) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 12454 | Resistor—33,000 ohms, ½ watt (R9) |
| 12264 | Resistor—220,000 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R5) |
| 35329 | Shaft—Tuning condenser drive shaft |
| 35334 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 30585 | Spring—Drive cord tension spring |
| 35098 | Spring—Spring necessary to hold I.F. transformer in can |
| 34846 | Transformer—Audio transformer |
| 35331 | Transformer—First i.f. transformer—less shield can |
| 33301 | Transformer—Second i.f. transformer |
| 34373 | Washer—"C" washer for drive shaft |

### MISCELLANEOUS ASSEMBLIES

| | |
|---|---|
| 35122 | Back—Cabinet back for Model 45X1 |
| 35125 | Back—Cabinet back for Model 45X2 |
| 35124 | Dial—Glass dial scale |
| 33317 | Fastener—Push fastener to hold cabinet |
| 35123 | Knob—Ivory tuning or volume control knob for Model 45X2 |
| 35121 | Knob—Walnut tuning or volume control knob for Model 45X1 |
| 35126 | Spring—Retaining spring for knobs, Stock Nos. 35121 and 35123 |

## MODELS 45X3, 45X4

### CHASSIS ASSEMBLIES (RC-457E)

| STOCK No. | DESCRIPTION |
|---|---|
| 12694 | Capacitor—220 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 32576 | Capacitor—Electrolytic comprising 1 section of 20 mfd., and 1 section of 12 mfd. |
| 35115 | Coil—Antenna coil |
| 35333 | Coil—Oscillator coil |
| 35977 | Condenser—Variable tuning condenser |
| 35979 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35982 | Dial—Dial scale |
| 35980 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 35981 | Plate—Dial plate—less dial |
| 30880 | Resistor—150 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35978 | Shaft—Tuning shaft |
| 35332 | Shield—Shield for first I-F transformer |
| 35345 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I-F transformer in shield can |
| 34846 | Transformer—Audio transformer |
| 35331 | Transformer—First I-F transformer—less shield |
| 33301 | Transformer—Second I-F transformer |
| 34373 | Washer—"C" washer for tuning shaft |

### MISCELLANEOUS ASSEMBLIES

| | |
|---|---|
| 36017 | Back—Cabinet back—Model 45X3 |
| 36018 | Back—Cabinet back—Model 45X4 |
| 35983 | Bezel—Dial scale bezel and crystal |
| 35121 | Knob—Walnut volume control or tuning knob |
| 35126 | Spring—Retaining spring for knob Stock No. 35121 |

### CHASSIS ASSEMBLIES

Radiola 500 (RC-464)
Radiola 501 (RC-464)

SAME AS RC457A

EXCEPT

| | |
|---|---|
| 36783 | Drum - Indicator drive drum |

### MISCELLANEOUS ASSEMBLIES

Radiola 500

| | |
|---|---|
| 37154 | Back—Cabinet back |
| 36784 | Dial—Dial scale |
| 33317 | Fastener—Push fastener to hold cabinet |
| 34016 | Knob—Volume control or tuning knob |
| 35126 | Spring—Retaining spring for knob, Stock No. 34016 |

### MISCELLANEOUS ASSEMBLIES

Radiola 501

| | |
|---|---|
| 37155 | Back—Cabinet back |
| 36784 | Dial—Dial scale |
| 33317 | Fastener—Push fastener to hold cabinet |
| 36670 | Knob—Volume control or tuning knob |
| 35126 | Spring—Retaining spring for knob |

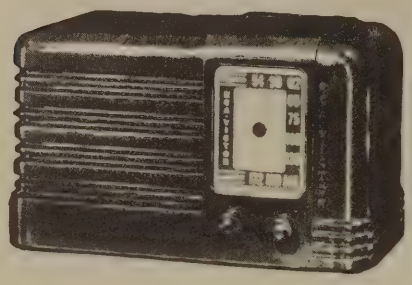
## ALL MODELS

### SPEAKER ASSEMBLIES (39105-505)

| | |
|---|---|
| 35120 | Cone—Cone complete with voice coil |
| 35119 | Speaker—4-inch dynamic speaker complete with cone and voice coil |

# Models 45X5 and 45X6 (Chassis No. RC-457-D)

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver



*Model 45X5*
*Walnut Finish Plastic Cabinet*

*Model 45X6*
*Ivory Finish Plastic Cabinet*

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,680 kc
Intermediate Frequency ..... 455 kc

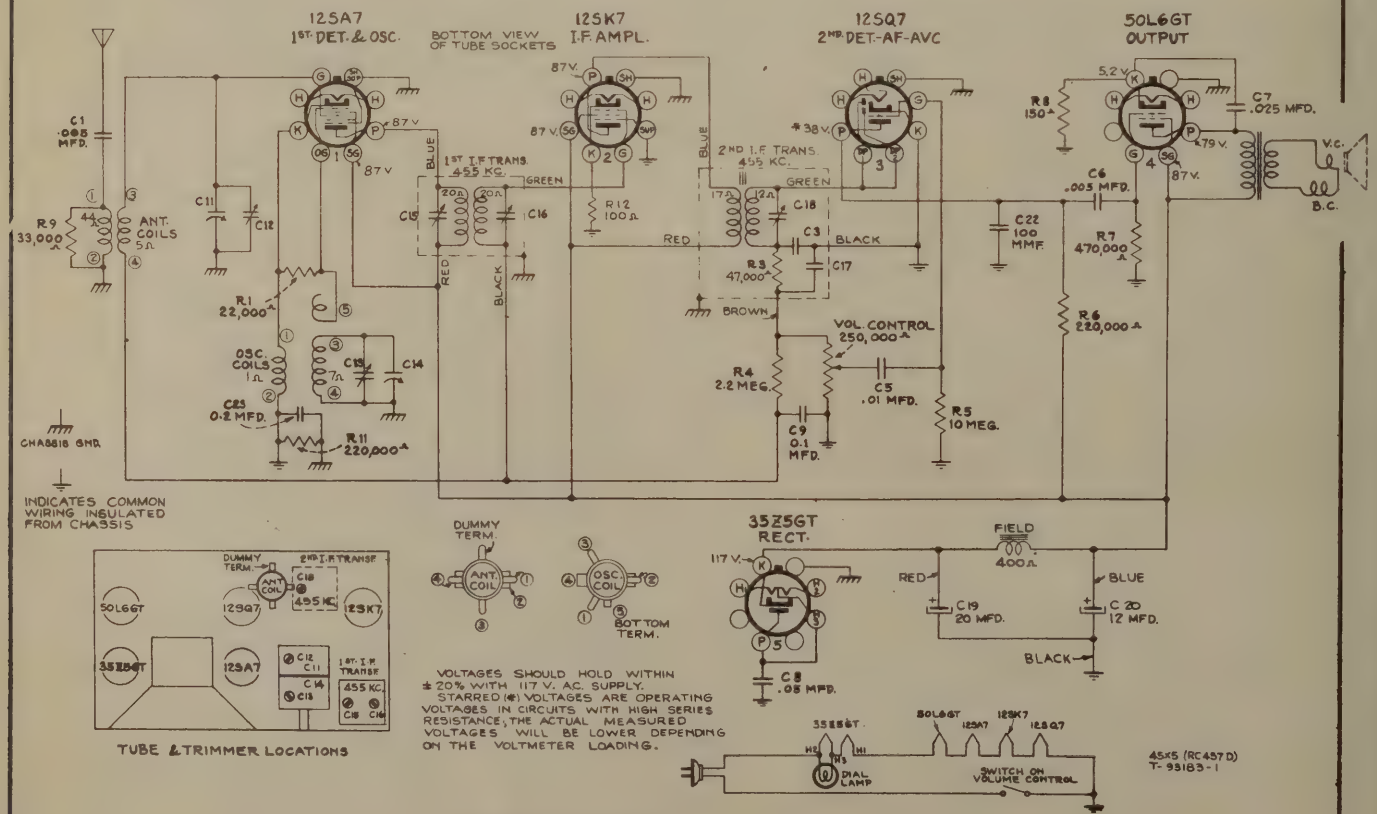
TUBE COMPLEMENT
(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Half-Wave Rectifier

Dial Lamp (1) ..... Mazda 51, 7.5 volts, 0.2 amp.

POWER SUPPLY RATINGS
A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)
Undistorted ..... 1.0 watts
Maximum ..... 1.25 watts

LOUDSPEAKER
Type ..... 4-inch Electrodynamic
Cabinet Dimensions (inches) .. Height 5-1/16, Width 8½, Depth 4½
Weight (net) ..... 4 pounds




VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY. STARRED (*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE, THE ACTUAL MEASURED VOLTAGES WILL BE LOWER DEPENDING ON THE VOLTMETER LOADING.

**Line Bypass Capacitor:**

In some production, the .005 mfd. line bypass is connected from plate to cathode on the rectifier tube, instead of from plate to chassis.

# Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

**Antenna.**—The set is equipped with length of antenna wire. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C18 (2nd I-F trans.) |
| 2 | Tuning condenser stator (osc.) in series with .01 mfd. | | | C15 and C16 (1st I-F trans.) |
| 3 | Antenna term. of ant. trans. in series with 100 mmfd. | 1,720 kc | Full clockwise (out of mesh) | C13 (oscillator) |
| 4 | | 1,400 kc | Resonance on 1,400 kc signal | C12 (antenna) |

### Precautionary Lead Dress

1. Green and blue leads from 1st I.F. transformer should be dressed apart and against chassis.
2. Blue lead of the 2nd I.F. transformer must be dressed against the shield and down between the tube socket and chassis.
3. Dress green diode lead away from 12SQ7 grid resistor and condenser.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-457D)** |
| 12720 | Capacitor—100 mmfd. (C22) |
| 33584 | Capacitor—.005 mfd. (C1, C6) |
| 4937 | Capacitor—.01 mfd. (C5) |
| 4870 | Capacitor—.025 mfd. (C7) |
| 32787 | Capacitor—.05 mfd. (C8) |
| 4839 | Capacitor—0.1 mfd. (C9) |
| 34505 | Capacitor—0.2 mfd. (C23) |
| 32576 | Capacitor—Electrolytic, comprising 1 section of 20 mfd. and 1 section of 12 mfd. (C19, C20) |
| 35115 | Coil—Antenna coil |
| 33452 | Condenser—2-gang variable tuning condenser |
| 35113 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35117 | Drum—Tuning condenser drive drum |
| 11765 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead |
| 14439 | Resistor—100 ohms, ½ watt (R12) |
| 30880 | Resistor—150 ohms, ½ watt (R8) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 12454 | Resistor—33,000 ohms, ½ watt (R9) |
| 12264 | Resistor—220,000 ohms, ½ watt (R6, R11) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R5) |
| 35329 | Shaft—Tuning shaft |
| 32969 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 32966 | Transformer—First I-F transformer |
| 34442 | Transformer—Second I-F transformer |
| 34373 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (39105-506)** |
| 35120 | Cone—Cone, complete with voice coil |
| 35611 | Speaker—4-inch dynamic speaker, complete with cone—less output transformer |
| 34174 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35122 | Back—Cabinet back for Model 45X5 |
| 35125 | Back—Cabinet back for Model 45X6 |
| 35124 | Dial—Glass dial scale |
| 35123 | Knob—Ivory tuning or volume control knob for Model 45X6 |
| 35121 | Knob—Walnut tuning or volume control knob for Model 45X5 |
| 35126 | Spring—Retaining spring for knobs, Stock Nos. 35121 and 35123 |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 35337 | Coil—Oscillator coil |
| 11909 | Spring—Spring and fibre washer to take up play in drive shaft |

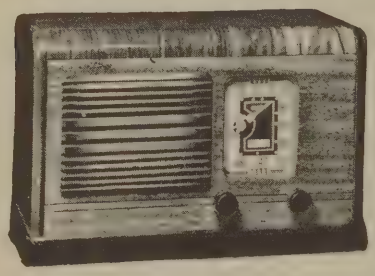
# Models 45X-16, 45X-17 45X111, 45X112 and 45X113

Chassis No. RC-459M RC-459J RC-459K

## AND RADIOLA 510, 511, 512, 513, ETC.

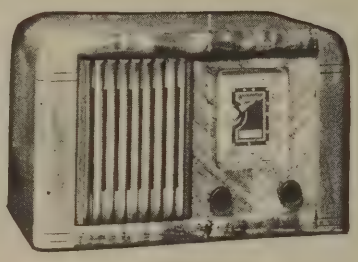
Chassis No. RC-459, RC-464A, RC-464B

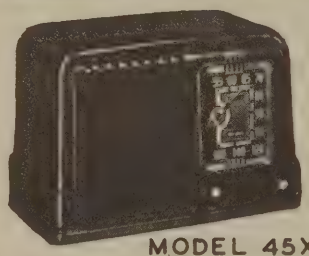
## Five-Tube, Single-Band, AC-DC, Superheterodyne Receivers



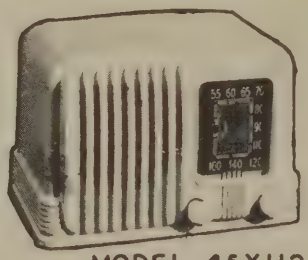
*At Left—*
*Model 45X-16*

*At Right—*
*Model 45X-17*

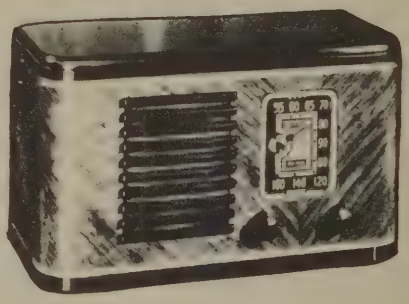




MODEL 45X111



MODEL 45X112



*Model 45X113*

| Model | Description | Cabinet Dimensions (inches) |
|---|---|---|
| 45X111 | Mahogany plastic finish | 6 19/32 x 9 25/32 x 5 7/8 |
| 45X112 | Antique-ivory plastic finish | 6 19/32 x 9 25/32 x 5 7/8 |
| 45X113 | Walnut finish | 8 1/2 x 13 1/2 x 6 5/16 |

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,600 kc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st Detector—Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Rectifier
Dial Lamp (1) ..... Mazda 51, 7.5 volts, .20 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 30 watts
D-C Rating ..... 105-125 volts, direct current, 30 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted ..... .8 watts
Maximum ..... 1.3 watts

LOUDSPEAKER

Type ..... 5-inch electrodynamic

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

**Antenna.**—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

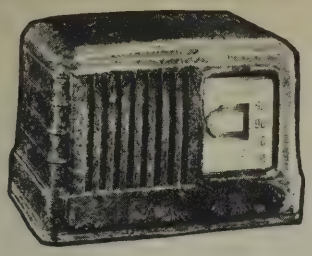
**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C9 and C10 (2nd I-F trans.) |
| 2 | Tuning condenser stator (osc.) in series with .01 mfd. | | | C7 and C8 (1st I-F trans.) |
| 3 | Radiation loop consisting of two turns of wire 18 inches in diameter | 1,600 kc | Full clockwise (out of mesh) | C3 (oscillator) |
| 4 | | 1,400 kc | Resonance on 1,400 kc signal | C1 (antenna) |

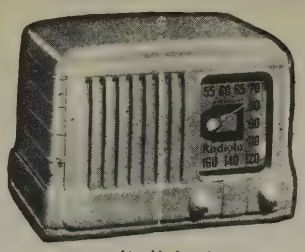
### Precautionary Lead Dress

1. Dress grid lead of 12SK7 close to chassis under condenser (C12).
2. Dress green and blue leads from i-f transformers close to chassis and away from each other.
3. Dress leads from terminal board on loop support away from loop.

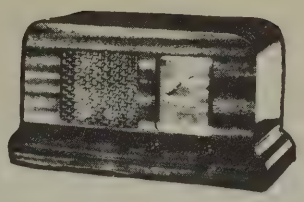
# 45X16, -17, 45X111, -112, -113, RADIOLA 510, 511, 512, 513



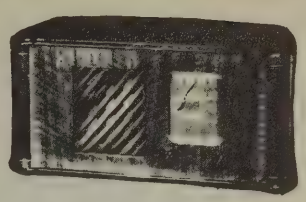
*Radiola 510*



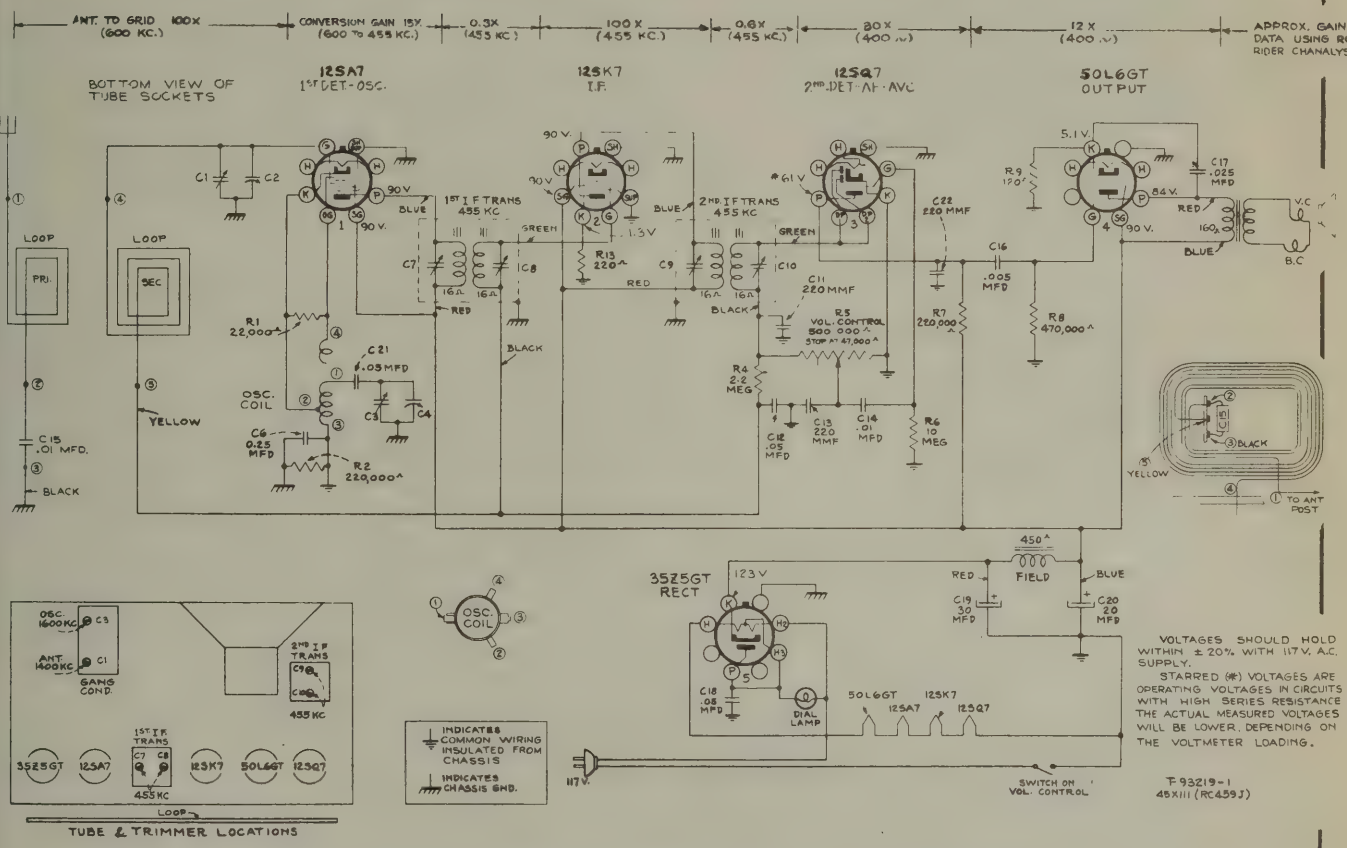
*Radiola 511*



*Radiola 512*



*Radiola 513*




NOTE: C17 is .015 mfd on RCA Victor Model 45 x 113 and Radiola 512 and 513.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | STOCK No. | DESCRIPTION |
|---|---|---|---|
| | **CHASSIS ASSEMBLIES (RC-459M)** | 35062 | Indicator—Station selector indicator |
| 35097 | Can—Shield can for transformers—Stock Nos. 35346 and 35347 | 11765 | Lamp—Dial lamp |
| 12694 | Capacitor—220 mmfd. | 35061 | Loop—Antenna loop |
| 33584 | Capacitor—.005 mfd. | 30189 | Resistor—120 ohms, ½ watt |
| 4937 | Capacitor—.01 mfd. | 14561 | Resistor—220 ohms, ½ watt |
| 11315 | Capacitor—.015 mfd. | 13998 | Resistor—22,000 ohms, ½ watt |
| 32787 | Capacitor—.05 mfd. | 12264 | Resistor—220,000 ohms, ½ watt |
| 12484 | Capacitor—0.25 mfd. | 12285 | Resistor—470,000 ohms, ½ watt |
| 35348 | Capacitor—Electrolytic, comprising 1 section of 30 mfd., and 1 section of 20 mfd. | 12679 | Resistor—2.2 meg., ½ watt |
| 35571 | Coil—Oscillator coil | 13601 | Resistor—10 meg., ½ watt |
| 35534 | Condenser—Variable tuning condenser | 35343 | Shaft—Drive shaft |
| 35344 | Control—Volume control and power switch | 34449 | Socket—Dial lamp socket |
| 32634 | Cord—Drive cord | 31251 | Socket—Tube socket |
| 35992 | Dial—Dial scale | 31418 | Spring—Drive cord spring |
| 35063 | Drum—Drive drum | 35098 | Spring—Retaining spring for transformers Stock Nos. 35346 and 35347 |
| 35993 | Frame—Dial frame—less dial | 35056 | Transformer—Audio transformer |
| | | 35346 | Transformer—First I-F transformer—less shield can |
| | | 35347 | Transformer—Second I-F transformer |
| | | 34373 | Washer—"C" washer for drive shaft |

# 45X16, -17, 45X111, -112, -113, RADIOLA 510, 511, 512, 513

## Replacement Parts (Continued)

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MISCELLANEOUS ASSEMBLIES** |
| 36041 | Back—Cabinet back for Model 45X16 |
| 36042 | Back—Cabinet back for Model 45X17 |
| 35996 | Bushing—Bushing and wood screw for rotor discs |
| 35079 | Crystal—Dial scale escutcheon and crystal |
| 35995 | Disc—Rotor disc (cardboard) |
| 35994 | Disc—Stationary disc (masonite) and rubber feet |
| 33006 | Foot—Rubber foot |
| 30863 | Knob—Tuning or volume control knob |
| 30900 | Spring—Retaining spring for knob |
| | **CHASSIS ASSEMBLIES** MODEL 45X111 } MODEL 45X112 } RC-459J MODEL 45X113—RC-459K |
| 35097 | Can—Shield can for transformers—Stock Nos. 35346 and 35347 |
| 12694 | Capacitor—220 mmfd. (C11, C13, C22) |
| 33640 | Capacitor—.005 mfd. (C16) |
| 4937 | Capacitor—.01 mfd. (C15) |
| 11315 | Capacitor—.015 mfd. (C14) (C17 for Model 45X113) |
| 30938 | Capacitor—.025 mfd. (C17 for Models 45X111, 45X112) |
| 32787 | Capacitor—.05 mfd. (C12, C18, C21) |
| 12484 | Capacitor—0.25 mfd. (C6) |
| 35348 | Capacitor—Electrolytic, comprising 1 section of 30 mfd.. and 1 section of 20 mfd. |
| 35571 | Coil—Oscillator coil |
| 35534 | Condenser—Variable tuning condenser |
| 35344 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35059 | Dial—Dial scale |
| 35063 | Drum—Drive drum |
| 35062 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 35061 | Loop—Antenna loop |
| 30189 | Resistor—120 ohms, ½ watt (R9) |
| 14561 | Resistor—220 ohms, ½ watt (R13) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 12264 | Resistor—220,000 ohms, ½ watt (R2, R7) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R6) |
| 35343 | Shaft—Drive shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Retaining spring for transformers—Stock Nos. 35346 and 35347 |
| 35056 | Transformer—Audio transformer |
| 35346 | Transformer—First I-F transformer—less shield can |
| 35347 | Transformer—Second I-F transformer |
| 34373 | Washer—"C" washer for drive shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35068 | Back—Cabinet back for Model 45X111 |
| 35070 | Back—Cabinet back for Model 45X112 |
| 35072 | Back—Cabinet back for Model 45X113 |
| 35067 | Crystal—Station selector crystal for Model 45X113 |
| 33317 | Fastener—Push fastener to hold backs—Stock Nos. 35068 and 35070 |
| 35069 | Fastener—Push fastener to hold crystal—Stock No. 35067 |
| 35071 | Knob—Ivory tuning or volume control knob for Model 45X112 |
| 35078 | Knob—Light mahogany tuning or volume control knob for Model 45X111 |
| 30863 | Knob—Walnut tuning or volume control knob for Model 45X113 |
| 30900 | Spring—Retaining spring for knobs—Stock Nos. 35071, 35078, 30863 |

| STOCK No. | DESCRIPTION |
|---|---|
| | Radiola 510 (RC-459J) Radiola 511 (RC-464A) Radiola 512, 513 (RC-464B) |
| 35097 | Can—Shield can for transformers—Stock Nos. 35346 and 35347 |
| 12694 | Capacitor—220 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. (Radiola 512, 513) |
| 30938 | Capacitor—.025 mfd. (Radiola 510, 511) |
| 32787 | Capacitor—.05 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 35348 | Capacitor—Electrolytic, comprising 1 section of 30 mfd., and 1 section of 20 mfd. |
| 35571 | Coil—Oscillator coil |
| 35534 | Condenser—Variable tuning condenser |
| 35344 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 36790 | Dial—Dial scale |
| 35063 | Drum—Drive drum |
| 36786 | Indicator—Station selector pointer |
| 11765 | Lamp—Dial lamp |
| 35061 | Loop—Antenna loop |
| 35993 | Plate—Dial scale mounting plate |
| 30189 | Resistor—120 ohms, ½ watt |
| 14561 | Resistor—220 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 35343 | Shaft—Drive shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring — Retaining spring for transformers — Stock Nos. 35346 and 35347 |
| 35056 | Transformer—Audio transformer |
| 35346 | Transformer—First I.F. transformer—less shield can |
| 35347 | Transformer—Second I.F. transformer |
| 34373 | Washer—"C" washer for drive shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35068 | Back—Cabinet back (Radiola 510) |
| 35070 | Back—Cabinet back (Radiola 511) |
| 36791 | Back—Cabinet back (Radiola 512, 513) |
| 35067 | Crystal—Station selector crystal (Radiola 512, 513) |
| 33317 | Fastener—Push fastener to hold backs, Stock Nos. 35068 and 35070 |
| 35069 | Fastener—Push fastener to hold crystal (Radiola 512, 513) |
| 36787 | Knob—Volume control or tuning knob (Radiola 510, 512, 513) |
| 36789 | Knob—Volume control or tuning knob (Radiola 511) |
| 30900 | Spring—Retaining spring for knob, Stock No. 36787 |
| | **ALL MODELS** |
| | **SPEAKER ASSEMBLIES (39223-502)** |
| 35065 | Cone—Cone complete with voice coil |
| | **SPEAKER ASSEMBLIES (RL-86-2)** |
| 32907 | Cap—Dust cap |
| 35066 | Cone—Cone complete with voice coil |
| 34450 | Speaker—5 inch dynamic speaker complete with cone and voice coil—less output transformer |

**Additional Replacement Parts:**

Stock No.

35993 Plate—Dial scale mounting plate...
11909 Spring—Spring and fibre washer to take up play in drive shaft.....

# Model 45X18

## Chassis No. RC-541-C

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that it is horizontal.

**Push Button Adjustment.**—The push-buttons should be adjusted for five favorite stations after the receiver is operating, and has had a brief warm-up period. Any standard broadcasting stations may be chosen, it being preferable to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Push in each button and loosen the push-button screws in back of the station marker recesses.
2. Accurately tune-in the first station manually.
3. With the station accurately tuned, press in the first push-button and tighten the screw.
4. Place station marker tab in the recess.
5. Adjust four remaining push buttons in a similar manner.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid, in series with .01 mfd. | 455 kc | Quiet point 1600 kc end of dial | C10, C9 2nd I-F Transformer |
| 2 | 12SA7 1st Det. grid in series with .01 mfd. | | | C8, C7 1st I-F Transformer |
| 3 | Ant. terminal in series with 100 mmfd. | 1600 kc | 1600 kc | C3 (osc.) |
| 4 | Radiation Loop | 1,300 kc | Signal | C1 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |

**Precautionary Lead Dress:**

1. Dress 1st I-F plate and grid leads against chassis and away from each other.
2. Dress plate lead from 12SK7 close to chassis.
3. Dress leads from terminal board on loop support away from loop.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

## Specifications

FREQUENCY RANGE ..... 540-1,600 kc
Intermediate Frequency ..... 455 kc

POWER-SUPPLY RATINGS
105-125 volts, direct current, or 50-60 cycles ..... 30 watts

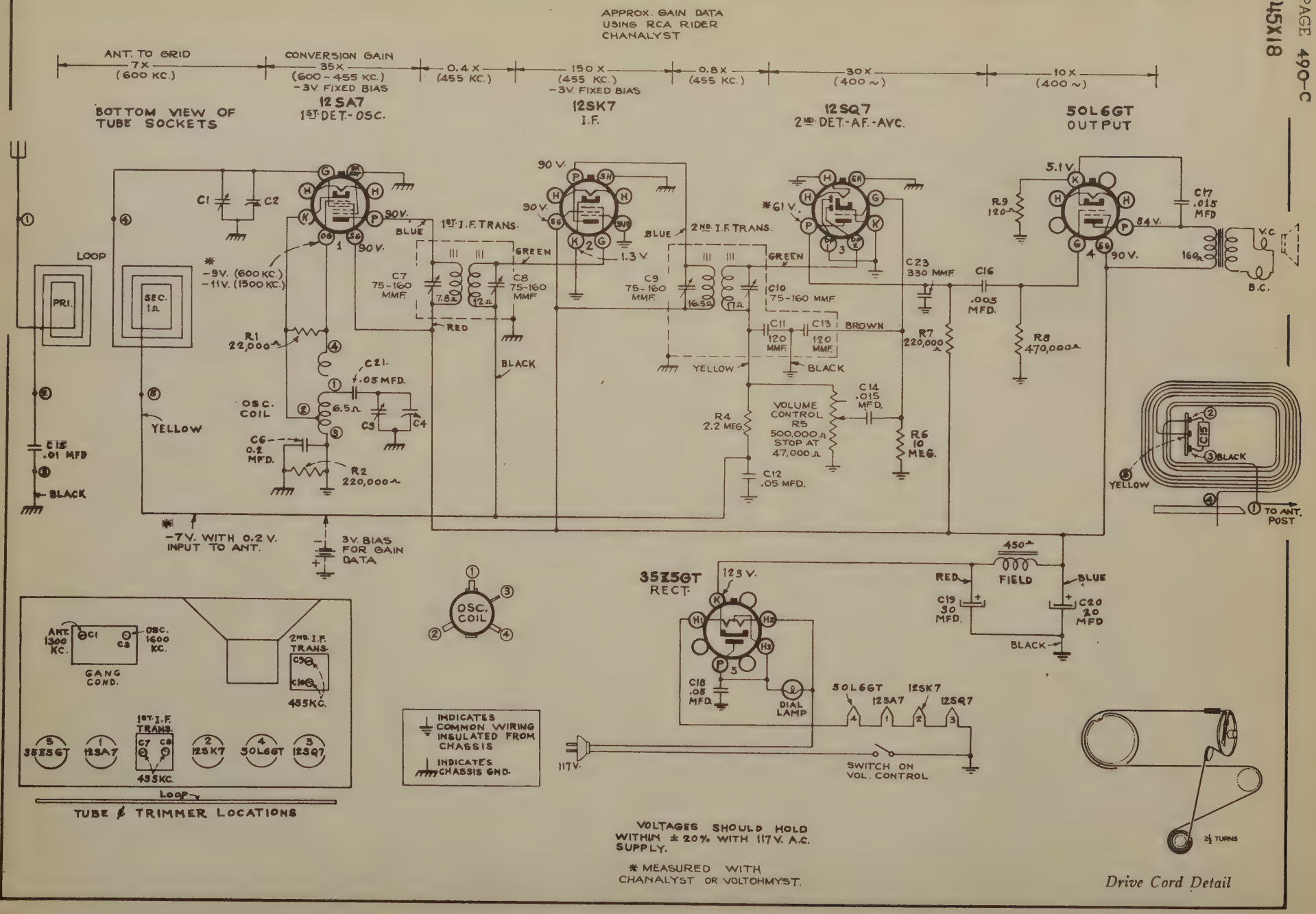
POWER OUTPUT (125 volts, 60 cycle supply)
Undistorted ..... 0.8 watts  Maximum ..... 1.2 watts

LOUDSPEAKER ..... 5 inch electrodynamic

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-541C)** |
| 36088 | Bearing—Tuning shaft bearing and nut |
| 36217 | Button—Push button |
| 35332 | Can—Shield can for I.F. transformer Stock No. 37364 |
| 12952 | Capacitor—330 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 35348 | Capacitor—Electrolytic comprising 1 section of 30 mfd., and 1 section of 20 mfd. |
| 35571 | Coil—Oscillator coil |
| 36315 | Condenser—Variable tuning condenser and push button mechanism |
| 35728 | Control—Volume control and power switch |
| 37365 | Dial—Dial scale |
| 36310 | Drum—Dial drum |
| 36645 | Fastener—Dial scale fastener |
| 36314 | Frame—Dial frame complete with 3 wood pulleys —less drum and dial |
| 36216 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 37366 | Loop—Antenna loop complete |
| 36317 | Plate—Push arm lock plate |
| 36312 | Pulley—Large drive cord pulley |
| 36313 | Pulley—Small drive cord pulley |
| 32535 | Resistor—120 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 36316 | Screw—Push arm screw |
| 36309 | Shaft—Push button shaft |
| 36916 | Shaft—Tuning shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 36131 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in shield can |
| 36232 | Transformer—First I.F. transformer |
| 37364 | Transformer—Second I.F. transformer—less shield can |
| 35056 | Transformer—Output transformer |
| 34373 | Washer—"C" washer for tuning shaft |
| 36311 | Washer—Dial drum "C" washer |
| | **SPEAKER ASSEMBLIES (RL-86-2)** |
| 32907 | Cap—Dust cap |
| 35570 | Cone—Cone complete with voice coil |
| 34450 | Speaker—5 inch dynamic speaker, complete with cone and voice coil—less output transformer |
| | **SPEAKER ASSEMBLIES (39223-2)** |
| 35065 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 37367 | Back—Cabinet back |
| 36219 | Crystal—Dial scale crystal |
| 33317 | Fastener—Push fastener for cabinet back |
| 35078 | Knob—Volume control or tuning knob |
| 34317 | Marker—Station selector marker |
| 30900 | Spring—Retaining spring for knob |


APPROX. GAIN DATA USING RCA RIDER CHANALYST
ANT. TO GRID 7X (600 KC.)
CONVERSION GAIN 35X (600-455 KC.) -3V. FIXED BIAS
0.4X (455 KC.)
150X (455 KC.) -3V. FIXED BIAS
0.8X (455 KC.)
30X (400 ~)
10X (400 ~)
BOTTOM VIEW OF TUBE SOCKETS
12SA7 1ST DET.-OSC.
12SK7 I.F.
12SQ7 2ND DET.-AF.-AVC.
50L6GT OUTPUT
LOOP
PRI.
SEC. 1Ω
C1
C2
90V.
BLUE
1ST I.F. TRANS.
GREEN
C7 75-160 MMF.
C8 75-160 MMF.
RED
BLACK
R1 22,000Ω
C21 .05 MFD.
OSC. COIL
6.5Ω
C3
C4
C6 0.2 MFD.
R2 220,000Ω
YELLOW
C15 .01 MFD
BLACK
-9V. (600 KC.)
-11V. (1500 KC.)
-7V. WITH 0.2 V. INPUT TO ANT.
3V. BIAS FOR GAIN DATA
90V.
1.3V.
2ND I.F. TRANS.
C9 75-160 MMF.
C10 75-160 MMF.
C11 120 MMF.
C13 120 MMF.
BROWN
YELLOW
BLACK
*61V.
R4 2.2 MEG.
VOLUME CONTROL R5 500,000Ω STOP AT 47,000Ω
C14 .015 MFD.
R6 10 MEG.
C12 .05 MFD.
R7 220,000Ω
C23 330 MMF.
C16 .005 MFD.
R8 470,000Ω
5.1V.
R9 120Ω
C17 .015 MFD
84V.
90V.
160Ω
V.C.
B.C.
TO ANT. POST
35Z5GT RECT.
123V.
450Ω
FIELD
RED
BLUE
C19 30 MFD.
C20 20 MFD
BLACK
C18 .05 MFD.
DIAL LAMP
117V.
SWITCH ON VOL. CONTROL
50L6GT 12SA7 12SK7 12SQ7
ANT. 1300 KC.
C1
C3
OSC. 1600 KC.
GANG COND.
2ND I.F. TRANS.
C9
C10
455KC.
1ST I.F. TRANS.
C7 C8
455KC.
5 35Z5GT
1 12SA7
2 12SK7
4 50L6GT
3 12SQ7
Loop
TUBE & TRIMMER LOCATIONS
INDICATES COMMON WIRING INSULATED FROM CHASSIS
INDICATES CHASSIS GND.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
2½ TURNS
Drive Cord Detail

# Models 46X-1, 46X-2, and 46X-3

Chassis Nos. RC-459B RC-459C

2ND PROD. RC-459F RC-459H

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver

*Model 46X-1*
*Mahogany*

*Model 46X-2*
*Ivory*

*Model 46X-3*

## Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,600 kc

Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st-Detector-Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd-Detector, 1st A-F, and A.V.C.
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Rectifier
Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

POWER OUTPUT (125 volt, 60 cycle supply)

Undistorted ..... .6 watts
Maximum ..... 2.0 watts

LOUDSPEAKER

Type ..... 5-inch electrodynamic

| Model | Weight (shipping) | Description | Cabinet Dimensions (inches) |
|---|---|---|---|
| 46X1 | 8¾ lbs. | Mahogany plastic finish | 6 19/32 x 9 25/32 x 5⅞ |
| 46X2 | 8¾ lbs. | Antique-ivory plastic finish | 6 19/32 x 9 25/32 x 5⅞ |
| 46X3 | 13¾ lbs. | Walnut finish | 8 5/16 x 14¼ x 7 7/16 |

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

**Antenna.**—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid in series with .01 mfd. | 455 kc | | C9 and C10 (2nd I-F trans.) |
| 2 | Tuning condenser stator (osc.) in series with .01 mfd. | | | C7 and C8 (1st I-F trans.) |
| 3 | Radiation loop consisting of two turns of wire 18 inches in diameter | 1,600 kc | Full clockwise (out of mesh) | C3 (oscillator) |
| 4 | | 1,400 kc | Resonance on 1,400 kc signal | C1 (antenna) |

### Precautionary Lead Dress

1. Dress grid lead of 12SK7 close to chassis under condenser (C12).
2. Dress green and blue leads from i-f transformers close to chassis and away from each other.
3. Dress leads from terminal board on loop support away from loop.

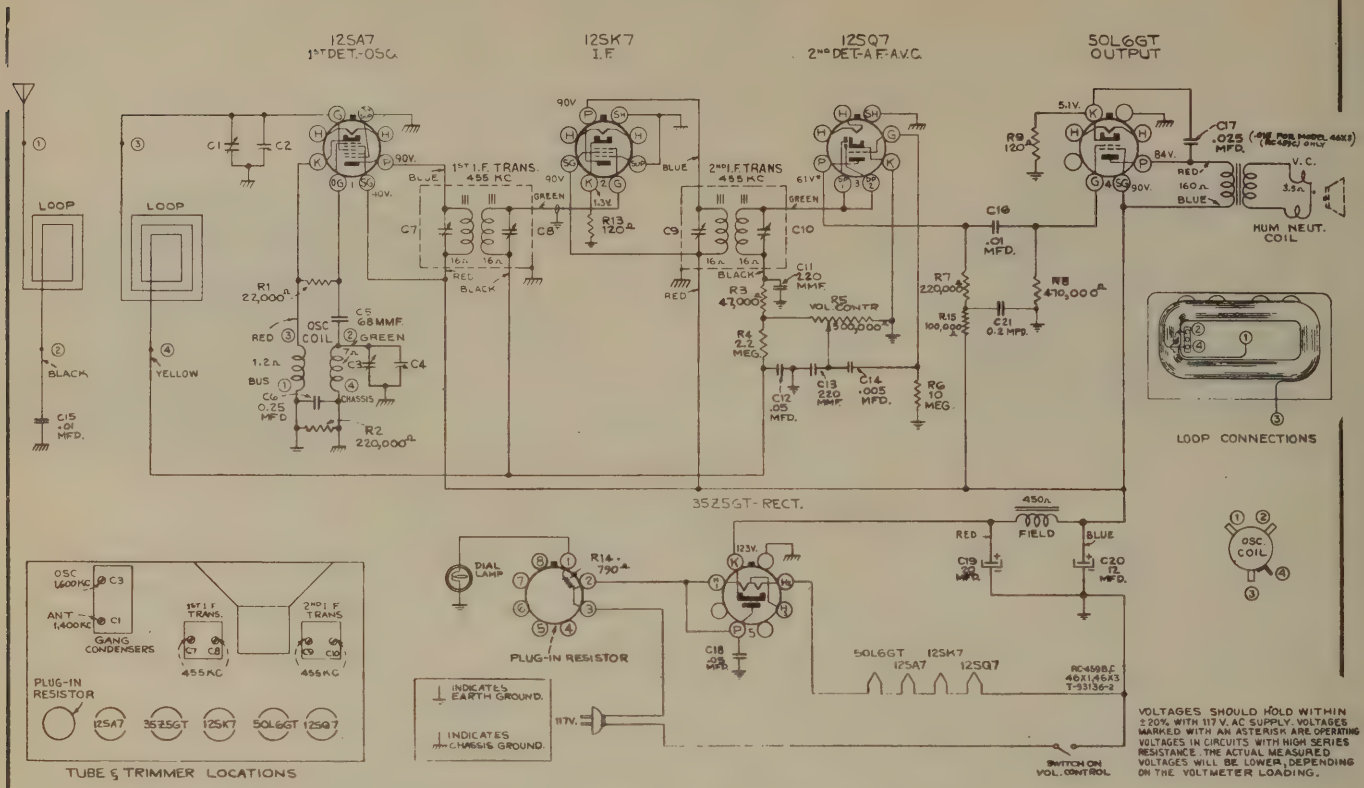
### Microphonic Howl:

Vibration of parts in the oscillator circuit may cause microphonic howl, which can be corrected by the following:

(a) See that the drive pulley does not touch the dial.
(b) Squeeze in the rear of the gang condenser frame, in order to center the rotor plates within the stator.
(c) Loosen the tuning condenser mounting screws slightly to ensure free floating of the gang.

### Dial Lamp Burnout:

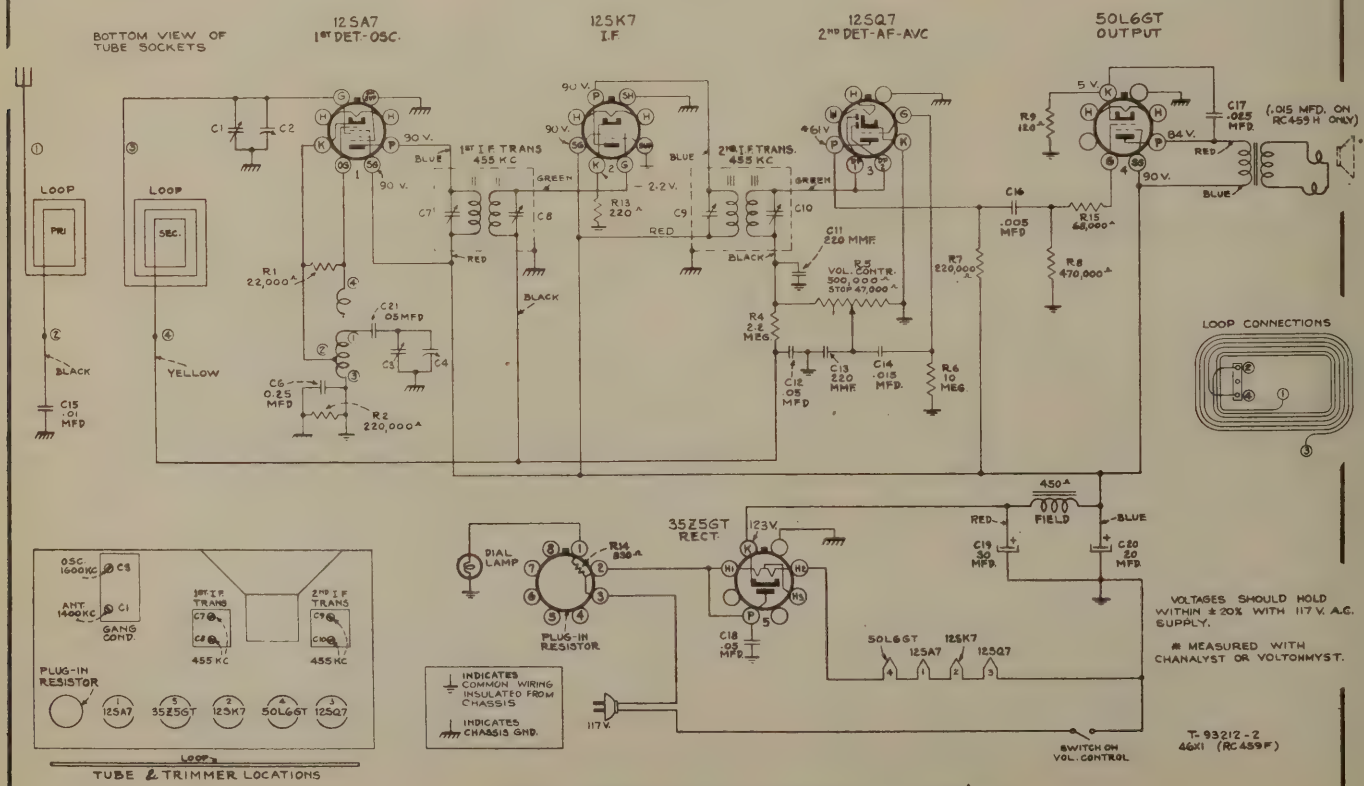
In Models 46X-1, -2, -3, -11, -12, -13, -21, -23, -24, the dial lamp is Mazda No. 47 (.15 amp.). In case of frequent burnout, Mazda No. 51 (.2 amp.) can be used for replacement.




*Schematic Circuit Diagram*

In some instruments R13 is 150 ohms

## 1ST PRODUCTION RC-459B, RC-459C




## 2ND PRODUCTION RC-459F, RC-459H

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

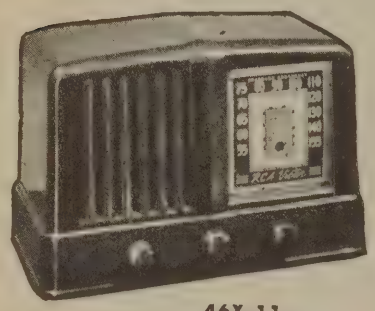
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-459B and RC-459C)** |
| 35000 | Ballast—Ballast tube resistor |
| 13057 | Capacitor—68 mmfd. (C5) |
| 12694 | Capacitor—220 mmfd. (C11, C13) |
| 33584 | Capacitor—.005 mfd. (C14) |
| 4937 | Capacitor—.01 mfd. (C15, C16) |
| 11315 | Capacitor—.015 mfd. (C17) |
| 30938 | Capacitor—.025 mfd. (C17) |
| 32787 | Capacitor—.05 mfd. (C12, C18) |
| 34505 | Capacitor—.2 mfd. (C21) |
| 12484 | Capacitor—0.25 mfd. (C6) |
| 35064 | Capacitor—Electrolytic comprising 1 section of 20 mfd. and 1 section of 12 mfd. |
| 34443 | Coil—Oscillator coil |
| 35053 | Condenser—Variable tuning condenser *less drive drum* |
| 35057 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 35063 | Drum—Tuning condenser drive drum |
| 35062 | Indicator—Station selector indicator |
| 31480 | Lamp—Dial lamp |
| 35061 | Loop—Antenna loop complete |
| 12071 | Resistor—120 ohms, ½ watt (R13) |
| 32535 | Resistor—120 ohms, ½ watt (R9) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 12412 | Resistor—47,000 ohms, ½ watt (R3) |
| 11281 | Resistor—100,000 ohms, 1/10 watt (R15) |
| 12264 | Resistor—220,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12679 | Resistor—2.2 megohms, ½ watt (R4) |
| 13601 | Resistor—10 megohms, ½ watt (R6) |
| 35000 | Resistor—Ballast tube resistor |
| 35060 | Scale—Dial scale |
| 35058 | Shaft—Tuning condenser drive shaft |
| 34449 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord tension spring |
| 35056 | Transformer—Output transformer |
| 35054 | Transformer—1st I.F. transformer |
| 35055 | Transformer—2nd I.F. transformer |
| 35000 | Tube—Ballast tube resistor |
| | **SPEAKER ASSEMBLIES (39223-2)** |
| 35065 | Cone—Cone complete with voice coil |
| 34174 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (RL 86-5)** |
| 32907 | Cap—Dust cap |
| 35066 | Cone—Cone complete with voice coil |
| 34450 | Speaker 5" dynamic speaker complete with cone and voice coil less output transformer |
| | **MISCELLANEOUS ASSEMBLIES (RR 574)** |
| 35068 | Back—Cabinet back for Model 46X1 |
| 35070 | Back—Cabinet back for Model 46X2 |
| 35077 | Back—Cabinet back for Model 46X3 |
| 35079 | Crystal—Dial scale crystal for Models 46X1 and 46X2 |
| 35067 | Crystal—Dial scale crystal for Model 46X3 |
| 35069 | Fastener—1 set Push Fastener for crystal on Models 46X1 and 46X2 |
| 35074 | Knob—Ivory tuning or volume control knob for Model 46X2 |
| 35073 | Knob—Light mahogany tuning or volume control knob for Model 46X1 |
| 35075 | Knob—Light walnut tuning or volume control knob for Model 46X3 |
| 35076 | Spring—Retaining spring for knobs Stock No. 35073, 35074 and 35075 |
| | **Additional Replacement Parts** |
| | **Stock No.** |
| 35993 | Plate—Dial scale mounting plate |
| 11909 | Spring—Spring and fibre washer to take up play in drive shaft |
| | R13 is 150 ohms (Stock No. 13428) in some production. |

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES Model 46X-1, RC-459F Model 46X-2, RC-459F Model 46X-3, RC-459H** |
| 35000 | Ballast—Ballast tube resistor |
| 35097 | Can—Shield can for I-F transformers Stock No. 35346, 35347 |
| 12694 | Capacitor—220 mmfd. (C11, C13) |
| 33584 | Capacitor—.005 mfd. (C16) |
| 4937 | Capacitor—.01 mfd. (C15) |
| 11315 | Capacitor—.015 mfd. (C14) (C17 for Model 46X-3) |
| 30938 | Capacitor—.025 mfd. (C17 for Models 46X-1, 46X-2) |
| 32787 | Capacitor—.05 mfd. (C12, C18, C21) |
| 12484 | Capacitor—.25 mfd. (C6) |
| 35348 | Capacitor—Electrolytic, comprising 1 section of 30 mfd., and 1 section of 20 mfd. (C19, and C20) |
| 35571 | Coil—Oscillator coil |
| 35534 | Condenser—Variable tuning condenser |
| 35344 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 35060 | Dial—Dial scale |
| 35063 | Drum—Tuning condenser drive drum |
| 35062 | Indicator—Station selector indicator |
| 31480 | Lamp—Dial lamp |
| 35061 | Loop—Antenna loop complete |
| 35993 | Plate—Dial scale mounting plate |
| 35000 | Resistor—Ballast tube resistor |
| 30189 | Resistor—120 ohms, ½ watt (R9) |
| 14561 | Resistor—220 ohms, ½ watt (R13) |
| 13998 | Resistor—22,000 ohms, ½ watt (R1) |
| 13715 | Resistor—68,000 ohms, ½ watt (R15) |
| 12264 | Resistor—220,000 ohms, ½ watt (R2, R7) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12679 | Resistor—2.2 megs., ¼ watt (R4) |
| 13601 | Resistor—10 megs., ¼ watt (R6) |
| 35343 | Shaft—Tuning condenser drive shaft |
| 34449 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I-F transformers in can |
| 35346 | Transformer—First I-F transformer—less shield can |
| 35347 | Transformer—Second I-F transformer—less shield can |
| 35056 | Transformer—Output transformer |
| 35000 | Tube—Ballast tube resistor |
| 34373 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (39223-2)** |
| 35065 | Cone—Cone complete with voice coil |
| | **SPEAKER ASSEMBLIES (RL-86-2)** |
| 32907 | Cap—Dust cap |
| 35066 | Cone—Cone complete with voice coil |
| 34450 | Speaker—5 in. dynamic speaker complete with cone and voice coil, less output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35068 | Back—Cabinet back for 46X-1 |
| 35070 | Back—Cabinet back for 46X-2 |
| 35077 | Back—Cabinet back for 46X-3 |
| 35079 | Escutcheon—Dial scale escutcheon and crystal for 46X-1 and 46X-2 |
| 35067 | Escutcheon—Dial scale escutcheon and crystal for 46X-3 |
| 33317 | Fastener—Push-on fastener for cabinet back, 46X-1, 46X-2 |
| 35069 | Fastener—Push-on fastener for crystal, 46X-1, 46X-2 |
| 35074 | Knob—Ivory tuning or volume control knob, 46X-2 |
| 35073 | Knob—Light mahogany tuning or volume control knob, 46X-1 |
| 35075 | Knob—Light walnut tuning or volume control knob, 46X-3 |
| 35076 | Spring—Retaining spring for knobs, Stock Nos. 35073, 35074, 35075 |

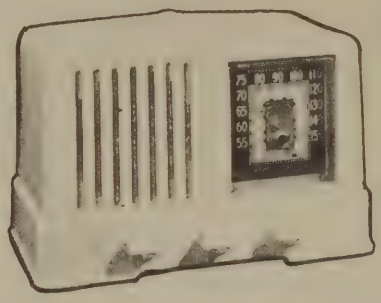
# Models 46X11, 46X12, and 46X13

Chassis Nos. RC456 and RC456A

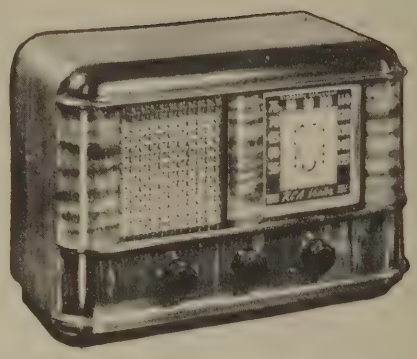
## Five-Tube, Two-Band, AC-DC Superheterodyne Receiver



46X-11.



RCA Victor 46X-12.



RCA Victor 46X-13.

## Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast ..... 540-1,600 kc
Medium Wave ..... 2.3-6.3 mc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st Detector—Oscillator
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-50L6GT ..... Power Output
(5) RCA-35Z5GT ..... Rectifier
Dial Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

POWER OUTPUT RATING

Undistorted ..... 1 watt
Maximum ..... 2 watts

LOUDSPEAKER

Type ..... 5-inch electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

| Model | Cabinet Description | Cabinet Dimensions (inches) |
|---|---|---|
| 46X11 | Mahogany Plastic | 8 x 12 x 7 |
| 46X12 | Antique Ivory Plastic | 8 x 12 x 7 |
| 46X13 | Walnut Veneer | 9-5/16 x 13½ x 7-3/16 |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | CHASSIS ASSEMBLIES<br>Model 46X11 (RC-456)<br>Model 46X12 (RC-456)<br>Model 46X13 (RC-456A) |
| 35000 | Ballast—Ballast tube resistor |
| 34025 | Board—Antenna terminal board |
| 35084 | Bracket—Tuning condenser mounting bracket with bearing bushing for tuning shaft |
| 32830 | Capacitor—Mica trimmer comprising 2 sections of 2-20 mmfd. (C3, C16) |
| 13200 | Capacitor—10 mmfd. (C10) |
| 12724 | Capacitor—120 mmfd. (C18, C21) |
| 31870 | Capacitor—415 mmfd. (C15) |
| 35099 | Capacitor—2,100 mmfd. (C7) |
| 33584 | Capacitor—.005 mfd. (C22) |
| 4937 | Capacitor—.01 mfd. (C2, C11, C23, C28) |
| 4870 | Capacitor—.025 mfd. (C24) |
| 32787 | Capacitor—.05 mfd. (C17, C27) |
| 34505 | Capacitor—0.2 mfd. (C4, C29) |
| 32576 | Capacitor—Electrolytic, comprising 1 section of 20 mfd., and 1 section of 12 mfd. (C25, C26) |
| 33724 | Coil—Oscillator coil ("A" band) |
| 35090 | Coil—Antenna coil—"B" band (L1, L2) |
| 35096 | Coil—Loop loading coil (L3) |
| 35251 | Coil—Oscillator coil—"B" band (L6) |
| 35082 | Condenser—Variable tuning condenser—less drum |
| 35086 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35093 | Dial—Dial scale |
| 35083 | Drum—Tuning condenser drive drum |
| 35091 | Indicator—Station selector indicator |
| 31480 | Lamp—Dial lamp |
| 35095 | Loop—Antenna loop complete |
| 35092 | Plate—Dial plate—less dial scale |
| 35000 | Resistor—Ballast tube resistor |
| 30936 | Resistor—120 ohms, 1 watt (R9) |
| 13428 | Resistor—150 ohms, ½ watt (R4) |
| 13998 | Resistor—22,000 ohms, ½ watt (R2, R3, R6) |
| 14560 | Resistor—100,000 ohms, ½ watt (R13) |
| 12264 | Resistor—220,000 ohms, ½ watt (R1, R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R10) |
| 12679 | Resistor—2.2 meg., ½ watt (R5) |
| 13601 | Resistor—10 meg., ½ watt (R7) |
| 35085 | Shaft—Tuning condenser drive shaft |
| 35094 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord tension spring |
| 35087 | Switch—Range switch |
| 35054 | Transformer—First I-F transformer |
| 35055 | Transformer—Second I-F transformer |
| 35056 | Transformer—Output transformer |
| 35000 | Tube—Ballast tube resistor |
| | SPEAKER ASSEMBLIES |
| 32907 | Cap—Dust cap |
| 35066 | Cone—Cone complete with voice coil (For Spkr. No. RL86-4) |
| 35065 | Cone—Cone complete with voice coil (For Spkr. No. 39223-4) |
| 34450 | Speaker—5-inch dynamic speaker complete with cone and voice coil (RL86-4) |
| | MISCELLANEOUS ASSEMBLIES |
| 35101 | Back—Cabinet back for Model 46X11 |
| 35102 | Back—Cabinet back for Model 46X12 |
| 35103 | Back—Cabinet back for Model 46X13 |
| X-818 | Cloth—Baffle board and grille cloth for Model 46X13 ..... net |
| 35104 | Crystal—Dial scale crystal for Models 46X11 and 46X12 |
| 35105 | Crystal—Dial scale crystal for Model 46X13 |
| 33317 | Fastener—Push on fastener for cabinet backs Models 46X11 and 46X12 |
| 35069 | Fastener—Push-on fastener for crystal Stock No. 35104 |
| 35107 | Knob—Ivory tuning, range switch or volume control knob for Model 46X12 |
| 35106 | Knob—Light mahogany tuning, range switch or volume control knob for Model 46X11 |
| 11455 | Knob—Walnut tuning, range switch or volume control knob for Model 46X13 |
| 11349 | Spring—Retaining spring for knob Stock No. 11455 |
| 14270 | Spring—Retaining spring for knobs Stock Nos. 35106 and 35107 |

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Pointer.**—With gang condenser in full mesh, the pointer should be adjusted to a horizontal position.

**Antenna.**—The set is equipped with a built-in loop antenna. If the loop antenna is used, the antenna terminal board link should be closed. This link should be open when an external antenna is used. Connect the external antenna to terminal 1. If an antenna longer than 100 feet (including lead-in) is used, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not operate, reverse the plug. On a-c, reversal of the plug may reduce hum.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 grid in series with .01 mfd. | 455 kc | "Standard Broadcast" band quiet point with gang nearly open | 2nd I-F Trans. |
| 2 | 12SA7 grid in series with .01 mfd. | | | 1st I-F Trans. |
| 3 | Ant. terminal 1 in series with 200 mmfd. Link closed | 600 kc | 600 kc "Standard Broadcast" band | L5 (osc.) |
| 4 | | 1,560 kc | Pointer at second from bottom mark at extreme right edge of dial plate* "Standard Broadcast" band | C8 (osc.) |
| 5 | | 1,400 kc | Resonance on 1,400 kc signal "Standard Broadcast" band | C6 (ant.) |
| 6 | | 600 kc | Resonance on 600 kc signal "Standard Broadcast" band | L5 (osc.) Rock gang |
| 7 | Repeat steps 4, 5, and 6 | | | |
| 8 | Ant. terminal 1 in series with 200 mmfd. Link closed | 6.1 mc | Pointer on dot at extreme right edge of dial* "Short Wave" band | C16 (osc.)** C3 (ant.) Rock gang |
| 9 | | 2.44 mc | Resonance on 2.44 mc signal "Short Wave" band | L6 (osc.) Rock gang |
| 10 | Repeat steps 8 and 9 | | | |

*These calibration marks are concealed when chassis is in cabinet.

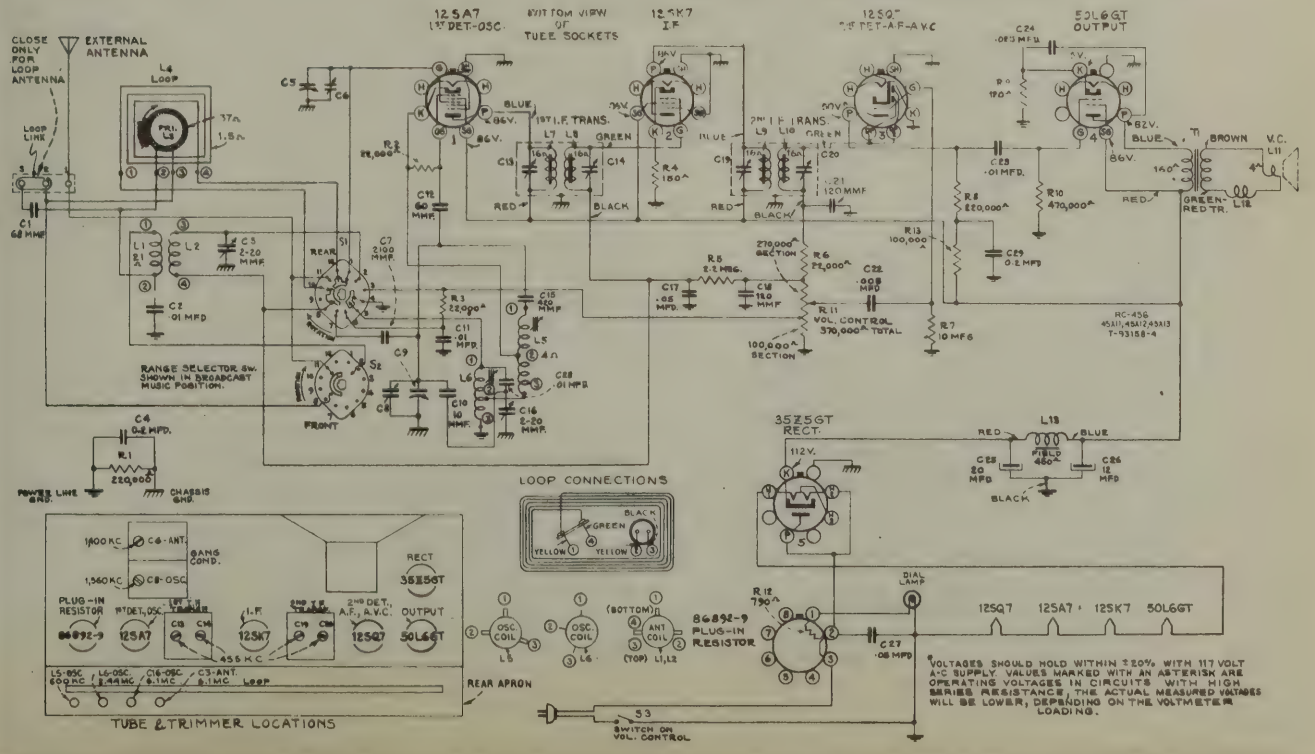
**Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver to approximately 5.19 mc where a weaker signal should be received.

### Antenna Circuit Change:

In some production of these models, capacitor C1 (68 mmfd.) is removed, and a through connection is made from terminal No. 3 on the antenna terminal board to terminal No. 2 on the loop.

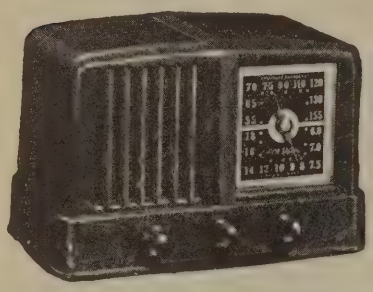
### Dial Lamp Burnout:

In Models 46X-1, -2, -3, -11, -12, -13, -21, -23, -24, the dial lamp is Mazda No. 47 (.15 amp.). In case of frequent burnout, Mazda No. 51 (.2 amp.) can be used for replacement.



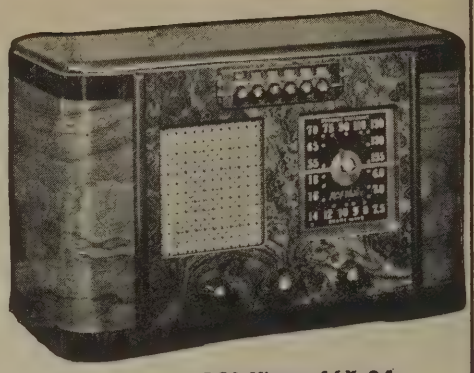
# Models 46X21, 46X23, and 46X24

## Chassis Nos. RC-461B, RC-461A and RC-461



RCA Victor 46X-21.

RCA Victor 46X-23.



RCA Victor 46X-24.

## Electrical and Mechanical Specifications

Frequency Ranges..... 550-1,550 kc and 6-18 mc

PUSH BUTTON RANGES (Model 46X24 only)

(1) Approximately 540- 945 kc
(2) Approximately 580-1,020 kc
(3) Approximately 650-1,320 kc
(4) Approximately 760-1,440 kc
(5) Approximately 990-1,560 kc

Intermediate Frequency..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7..... 1st Detector—Oscillator
(2) RCA-12SK7..... I-F Amplifier
(3) RCA-12SQ7..... 2nd Detector, AVC, A-F Amplifier
(4) RCA-50L6GT..... Power Output
(5) RCA-35Z5GT..... Rectifier
Dial Lamp (1)..... Mazda No. 47, 6.3 volts, 0.15 amps.

POWER OUTPUT RATING

Undistorted..... 1.1 watts
Maximum..... 1.4 watts

LOUDSPEAKER (RL81A1)

Type..... 5-inch permanent magnet dynamic
Voice Coil Impedance at 400 Cycles..... 4.5 ohms

POWER SUPPLY RATINGS

A-C Rating..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating..... 105-125 volts, direct current, 50 watts

| Model | Cabinet Dimensions | Shipping Wt. |
|---|---|---|
| 46X21 | 8 x12x7 (inches) | 10⅜ lbs. |
| 46X23 | 9¼x14x7½ (inches) | 12½ lbs. |
| 46X24 | 10¼x16x7⅜ (inches) | 14½ lbs. |

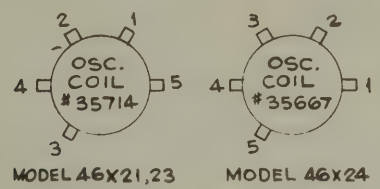
## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 35000 | Ballast—Ballast tube resistor |
| 35097 | Can—Shield can for I.F. transformers |
| 12722 | Capacitor—18 mmfd. (C44 for 46X-21, -23) |
| 12896 | Capacitor—15 mmfd. (C44 for 46X-24) |
| 14021 | Capacitor—22 mmfd. (C41) |
| 13057 | Capacitor—68 mmfd. (C12) |
| 35663 | Capacitor—Mica trimmer comprising 2 sections of 115-440 mmfd., 2 sections of 90-365 mmfd., 2 sections of 42-280 mmfd., 2 sections of 25-190 mmfd. and 2 sections of 10-80 mmfd. for 46X24 |
| 12725 | Capacitor—150 mmfd. (C18, C21, C42) |
| 35665 | Capacitor—Mica trimmer comprising 1 section of 300-600 mmfd. and 2 sections of 2-20 mmfd. |
| 13895 | Capacitor—5,600 mmfd. (C10) |
| 33640 | Capacitor—.005 mfd. (C23) |
| 4937 | Capacitor—.01 mfd. ( C2, C11, C16) |
| 14393 | Capacitor—.01 mfd. (C1) |
| 35338 | Capacitor—.015 mfd. (C24 for 46X-23, -24) |
| 30938 | Capacitor—.025 mfd. (C24 for 46X-21) |
| 32787 | Capacitor—.05 mfd. (C27, C43, C45) |
| 4886 | Capacitor—.05 mfd. (C7) |
| 4839 | Capacitor—0.1 mfd. (C28) |
| 34505 | Capacitor—0.2 mfd. (C4) |
| 35673 | Capacitor—Electrolytic comprising 1 section of 50 mfd. and 1 section of .30 mfd. (C25, C26) |
| 35713 | Coil—Antenna coil—"C" band—46X21, 23 |
| 35661 | Coil—Antenna coil—"C" band for Model 46X24 |
| 35096 | Coil—Loop loading coil |
| 35714 | Coil—Oscillator coil—"A" and "C" bands for Models 46X21 and 46X23 |
| 35667 | Coil—Oscillator coil—"A" and "C" bands for Model 46X24 |
| 35658 | Condenser—Tuning condenser—46X21 |
| 35657 | Condenser—Tuning condenser—46X23 |
| 35656 | Condenser—Tuning condenser—46X24 |
| 35086 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35670 | Dial—Dial scale for Model 46X21 |
| 35669 | Dial—Dial scale for Model 46X23 and 46X24. |
| 35659 | Drum—Tuning condenser drive drum |
| 35668 | Indicator—Station selector indicator |
| 31480 | Lamp—Dial lamp |
| 35664 | Loop—Antenna loop complete |
| 35672 | Plate—Dial plate less dial scale—46X21 |
| 35671 | Plate—Dial plate less scale—46X23, 24 |
| 35000 | Resistor—Ballast tube resistor |
| 14439 | Resistor—100 ohms, ½ watt (R15) |
| 30936 | Resistor—120 ohms, 1 watt (R9) |
| 13428 | Resistor—150 ohms, ½ watt (R4) |
| 3153 | Resistor—1,500 ohm, 1 watt (R14) |
| 13998 | Resistor—22,000 ohm, ½ watt (R3, R6) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12264 | Resistor—220,000 ohm, ½ watt (R1, R8) |
| 12285 | Resistor—470,000 ohm, ½ watt (R10) |
| 12679 | Resistor—2.2 megohm, ½ watt (R5) |
| 13601 | Resistor—10 megohm, ½ watt (R7) |
| 35085 | Shaft—Tuning condenser drive shaft |
| 31418 | Spring—Drive cord spring |
| 35098 | Spring—Spring to hold I.F. transformer in cans |
| 31319 | Socket—Tube socket |
| 35094 | Socket—Dial lamp socket |
| 35660 | Switch—Range switch |
| 35662 | Switch—Push button switch for 46X24 |
| 35666 | Transformer—Audio transformer |
| 35088 | Transformer—First I.F. trans. less shield can |
| 35089 | Transformer—Second I.F. trans. less shield can. |
| 35000 | Tube—Ballast tube resistor |
| 34373 | Washer—Spring washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL81A1)** |
| 32907 | Cap—Dust cap |
| 35569 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35676 | Back—Back cover for Model 46X21 |
| 35675 | Back—Back cover for Model 46X23 |
| 35674 | Back—Back cover for Model 46X24 |
| 32279 | Button—Push button for Model 46X24 |
| 35104 | Crystal—Escutcheon and crystal—46X21 |
| 35677 | Crystal—Escutcheon and crystal—46X23, 24 |
| 35680 | Escutcheon—Push button escutcheon—46X24 |
| 35678 | Fastener—Push on fastener to hold crystal for Model 46X21 |
| 33006 | Foot—Rubber foot for Model 46X23 |
| 35679 | Knob—Volume control, tuning or range switch. |
| 34317 | Marker—Push button markers for Model 46X24 |
| 35681 | Rotor—Cabinet rotating disc for Model 46X21 |
| 35682 | Rotor—Cabinet rotating disc for Model 46X23. |
| 34293 | Spring—Retaining spring for button Stock No. 32279 for Model 46X24 |
| 30900 | Spring—Retaining spring for knob Stock No. 35679 |

| Step | Connect high side of test oscillator to— | Tune test oscillator to— | Turn radio dial to— | Adjust following for max. output— |
|---|---|---|---|---|
| 1 | Grid 12SK7 in series with 0.01 mfd. | 455 kc | "A" Band Quiet Point at 1,550 kc end of dial | C19 and C20 (2nd I-F Trans.) |
| 2 | Grid 12SA7 in series with 0.01 mfd. | | | C13 and C14 (1st I-F Trans.) |
| 3 | Antenna in series with 200 mmfd. | 600 kc | "A" Band 600 kc | C15 (osc.) |
| 4 | | 1,560 kc | "A" Band Full Clockwise | C8 (osc.) |
| 5 | | 1,400 kc | Resonance on 1,400 kc "A" Band | C6 (ant.) |
| 6 | Repeat steps 3 (rock in), 4 and 5 | | | |
| 7 | Antenna in series with 300 ohms | 18.5 kc | "C" Band Full Clockwise | C17 (osc.)* |
| 8 | | 17.8 kc | "C" Band Resonance on 17.8 kc Signal | C3 (ant.) |
| 9 | Repeat steps 7 and 8 | | | |

* Use minimum capacity peak if two can be obtained.
Note: Oscillator tracks above signal on all bands.




*Oscillator Coil Terminals in Models 46X-21, 46X-23*

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Pointer.**—With gang condenser in full mesh, the pointer should be adjusted to a horizontal position.

**Antenna.**—The set is equipped with a built-in loop antenna. If the loop antenna is used, the antenna terminal board link should be closed. This link should be open when an external antenna is used. Connect the external antenna to terminal 1. If an antenna longer than 100 feet (including lead-in) is used, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not operate, reverse the plug. On a-c, reversal of the plug may reduce hum.

**Adjustments for Electric Tuning:**

The push buttons and corresponding frequency ranges are given in the schematic diagram. Allow the set to warm up for about 15 minutes and proceed as follows:

(1) List five desired stations in order of the push button ranges.

(2) Push in the dial tuning (right hand) button and manually tune in the first station on the list.

(3) Press button No. 1. Turn R-F screw half way in; next turn the oscillator screw entirely in and then gradually back out until the station is heard.

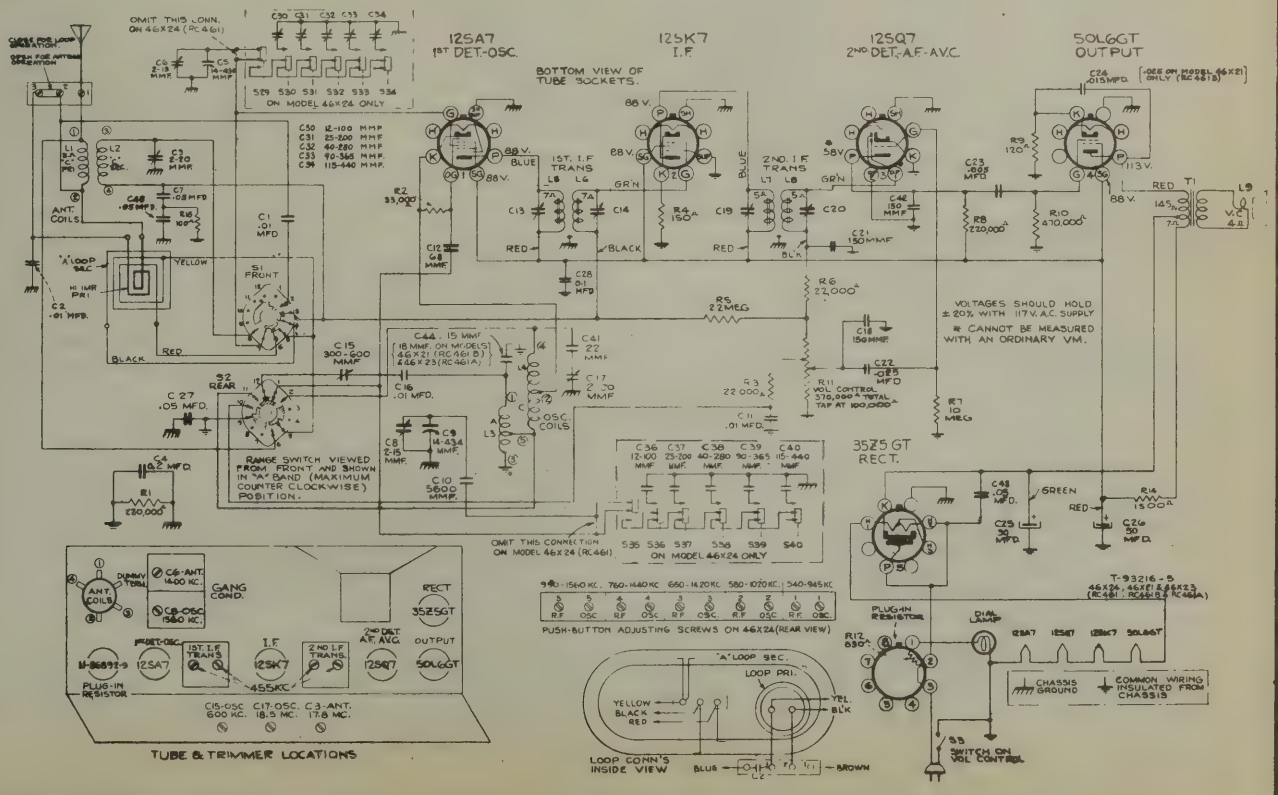
(4) Adjust the R-F trimmer for maximum output. **(Clockwise adjustment of oscillator and R-F trimmers tunes the circuits to lower frequencies.)**

(5) By turning the set to a position in which reception is weak a final more accurate adjustment may be made.

(6) Adjust for each of the remaining stations in a similar manner and place corresponding station tabs in recesses above buttons. A "Dial Tuning" tab should be above button No. 6.

**Precautionary Lead Dress:**

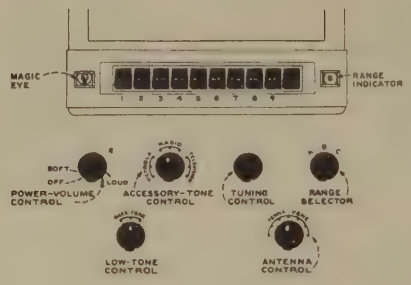
(1) Dress all leads away from oscillator and antenna coils.
(2) Dress cathode resistor (R4) and B+ lead across 12SK7 socket between plate and grid terminals.
(3) (46X24 only) Dress leads to push button switch straight up and parallel so that they do not touch each other.
(4) Dress black lead from 1st I-F transformer over green lead.
(5) Keep plate-cathode bypass (C43) of rectifier tube away from volume control.


12SA7 1ST DET.-OSC.
12SK7 I.F.
12SQ7 2ND DET.-A.F.-A.V.C.
50L6GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS.
1ST. I.F. TRANS
2ND. I.F. TRANS
VOLTAGES SHOULD HOLD ± 20% WITH 117 V. A.C. SUPPLY
R CANNOT BE MEASURED WITH AN ORDINARY VM.
35Z5 GT RECT.
OMIT THIS CONN. ON 46X24 (RC461)
OMIT THIS CONNECTION ON MODEL 46X24 (RC461)
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAXIMUM COUNTER CLOCKWISE) POSITION.
PUSH-BUTTON ADJUSTING SCREWS ON 46X24 (REAR VIEW)
PLUG-IN RESISTOR
DIAL LAMPS
CHASSIS GROUND
COMMON WIRING INSULATED FROM CHASSIS
TUBE & TRIMMER LOCATIONS
LOOP CONN'S INSIDE VIEW
S3 SWITCH ON VOL CONTROL

# MODEL U-46 Victrola and MODEL K-130

**Chassis No. RC-501** **Chassis No. RC-501A**

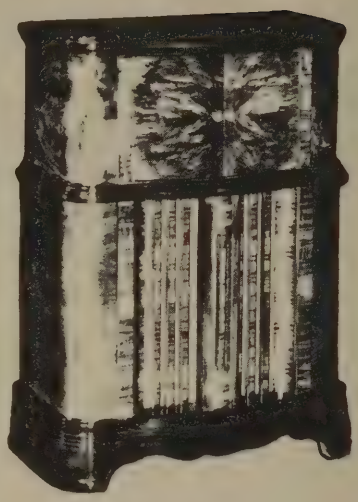
## 13-Tube, Three-Band, Electric Tuning, A-C Superheterodynes




*Above—Operating Controls*

*At Right—Model K-130*

*At Left—Model U-46*



## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,560 kc |
| Medium Wave | 1.55-4.0 mc |
| Short Wave | 5.8-18.0 mc |
| INTERMEDIATE FREQUENCY | 455 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Det., Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6H6 | 2nd Det., A.V.C. |
| (5) RCA-6SF5 | A-F Amplifier |
| (6) RCA-6SF5 | Phase Inverter |
| (7) RCA-6F6-G | Power Output |
| (8) RCA-6F6-G | Power Output |
| (9) RCA-6F6-G | Power Output |
| (10) RCA-6F6-G | Power Output |
| (11) RCA-6U5/6G5 | Tuning Indicator |
| (12) RCA-5U4-G, (13) RCA-5U4-G | Rectifiers in Power Supply Unit. |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 20 watts |
| Maximum | 22 watts |

LOUDSPEAKER (RL-76B-5)

| | |
|---|---|
| Type | 12-inch electrodynamic |
| V.C. Impedance | 11.5 ohms at 400 cycles |

POWER SUPPLY RATINGS K-130 (U-46, 50 watts additional)

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 200 watts |
| Rating B | 105-125 volts, 25-60 cycles, 200 watts |
| Rating C | 105-130, 140-160, 200-250 volts, 40-60 cycles, 200 watts |

PHONOGRAPH (Model U-46 only) **RP-140**

| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch or Seven 12-inch |
| Turntable Speed | 78 r.p.m. (Adjustable) |
| Type Pickup | Crystal |
| Pickup Impedance | 100,000 ohms at 1,000 cycles |

## Adjustments for Electric Tuning

1. Make a list of the desired nine stations, arranged in order from low to high frequencies.
2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Turn "Accessory-Tone Control" to most clockwise "Radio" position.
4. Press down the "dial-tuning" (right-hand) button.
5. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
6. Hold down the "dial-tuning" button, and press down station button No. 1 (at left). Both buttons will stay down, central dial lamp will light brightly or dimly, depending on which side of disc contact is made. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
7. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
8. Repeat this process for the remaining stations.

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action. For the first eight steps in alignment the low side of the test-oscillator should be connected to the receiver chassis. Following step 8, the signal must be radiated.

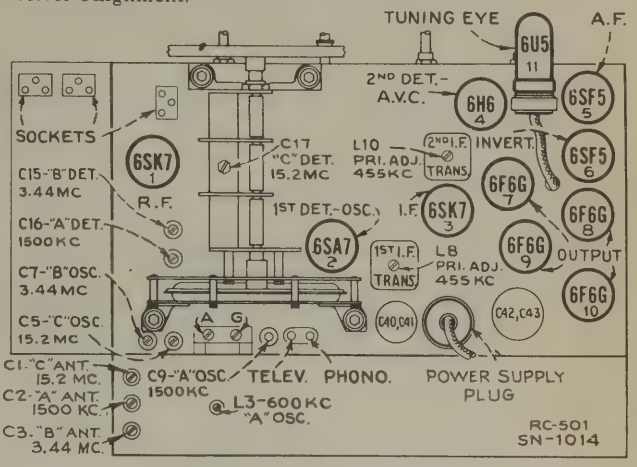
**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during the first eight steps of alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

## Alignment Procedure

For additional details, refer to booklet "RCA Victor Receiver Alignment."




*Tube and Trimmer Locations*

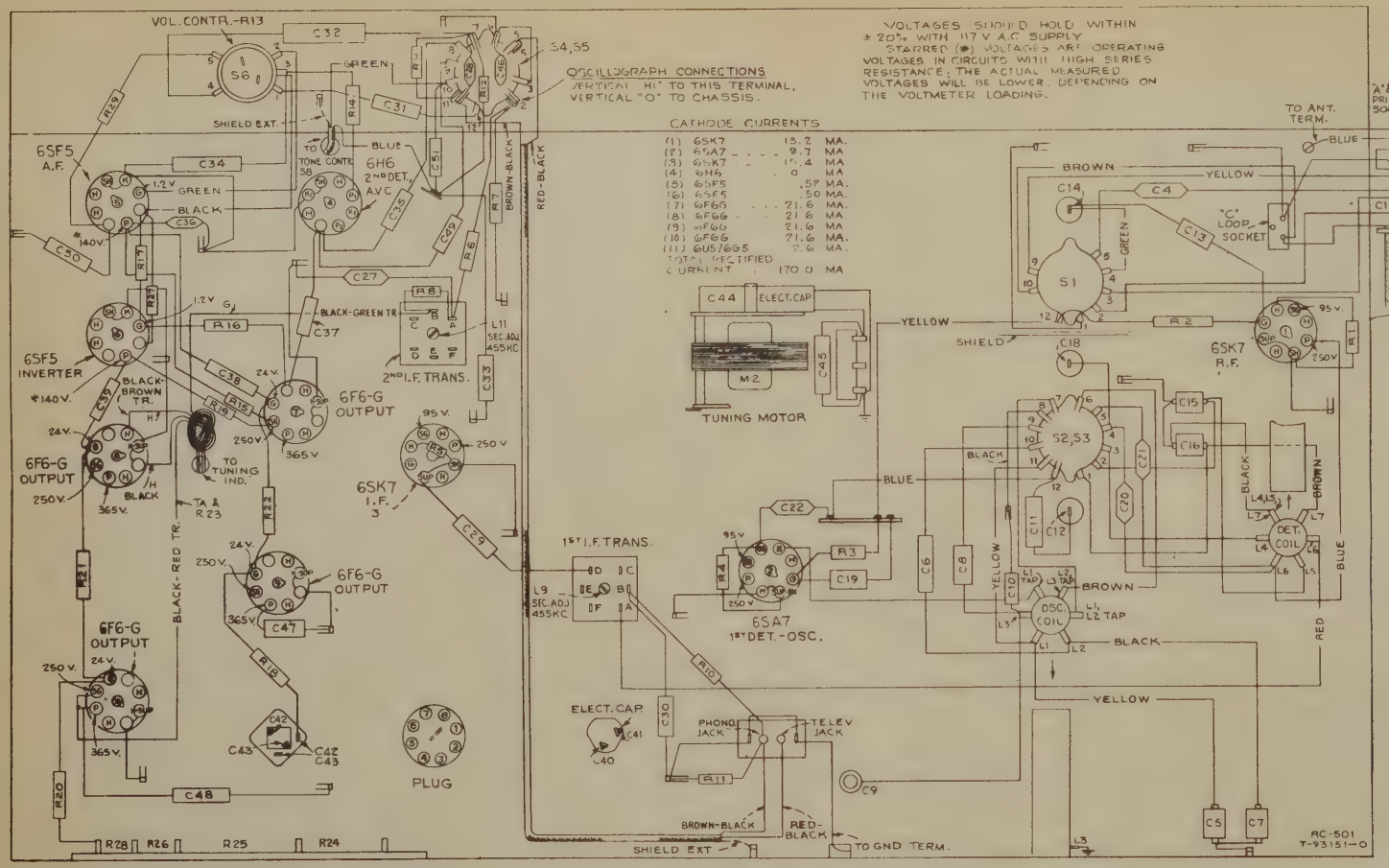
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" band quiet point | L10 and L11 (2nd I-F trans.) |
| 2 | 6SA7 det. grid in series with .01 mfd. | | | L8 and L9 (1st I-F trans.) |
| 2A | With input to 6SA7 grid, do not re-adjust 2nd I-F trans. after 1st I-F trans. has been adjusted. | | | |
| 3 | Front section of gang in series with .01 mfd. | 15.2 mc | "C" band 15.2 mc (144°) | C5 (osc.)* C17 (det.)** Rock gang |
| 4 | | 3.44 mc | "B" band 3.44 mc (136°) | C7 (osc.)* C15 (det.)** |
| 5 | | 600 kc | "A" band 600 kc (29.5°) | L3 (osc.) |
| 6 | | 1,500 kc | "A" band 1,500 kc (165°) | C9 (osc.) C16 (det.) |
| 7 | | 600 kc | "A" band 600 kc (295°) | L3 (osc.) Rock gang |
| 8 | | Repeat step 6 | | |
| 9 | Following step 8, a radiated signal must be used for the remainder of the alignment. One or two turns of wire forming a loop approximately 18 inches in diameter connected across the output of a test-oscillator such as RCA Model 153, or Stock No. 9595 (TMV-97C), etc., will be suitable. For the adjustments using the radiated signal, the chassis must be placed in the cabinet and the receiver loops connected. | 15.2 mc | "C" band; 15.2 mc | C1 (ant.) |
| 10 | | 6.1 mc | "C" band; 6.1 mc | Inductance of "C" band loop† |
| 11 | | Repeat step 9 | | |
| 12 | | 3.44 mc | "B" band; 3.44 mc | C3 (ant.) |
| 13 | | 1,500 kc | "A" band; 1,500 kc | C2 (ant.) |
| 14 | | 600 kc | "A" band; 600 kc | L3 (osc.) Rock gang |
| 15 | | 1,500 kc | "A" band; 1,500 kc | C9 (osc.) C16 (det.) |

* Use minimum capacity peak if two can be obtained. Check for selection of correct peak by tuning receiver approximately 910 kc lower where a weaker signal should be received.

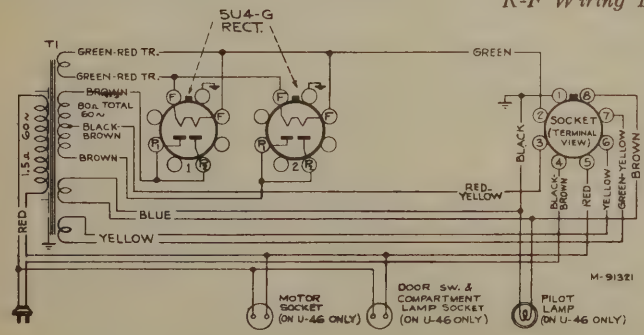
** Use maximum capacity peak if two can be obtained.

† Adjust the inductance of "C" band loop by varying the spacing between the leads of the loop. Moving the leads closer together decreases the inductance and tunes the loop to a higher frequency; moving the leads farther apart increases the inductance and tunes the loop to a lower frequency.

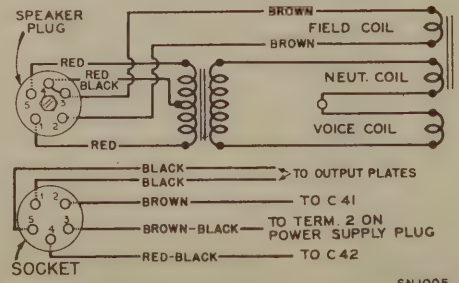
**Important.**—The oscillator tracks above the signal on all bands.




*R-F Wiring Diagram and Socket Voltages*




*Power Supply Schematic Circuit Diagram*




*Speaker Plug Connections*

## MODEL U-46

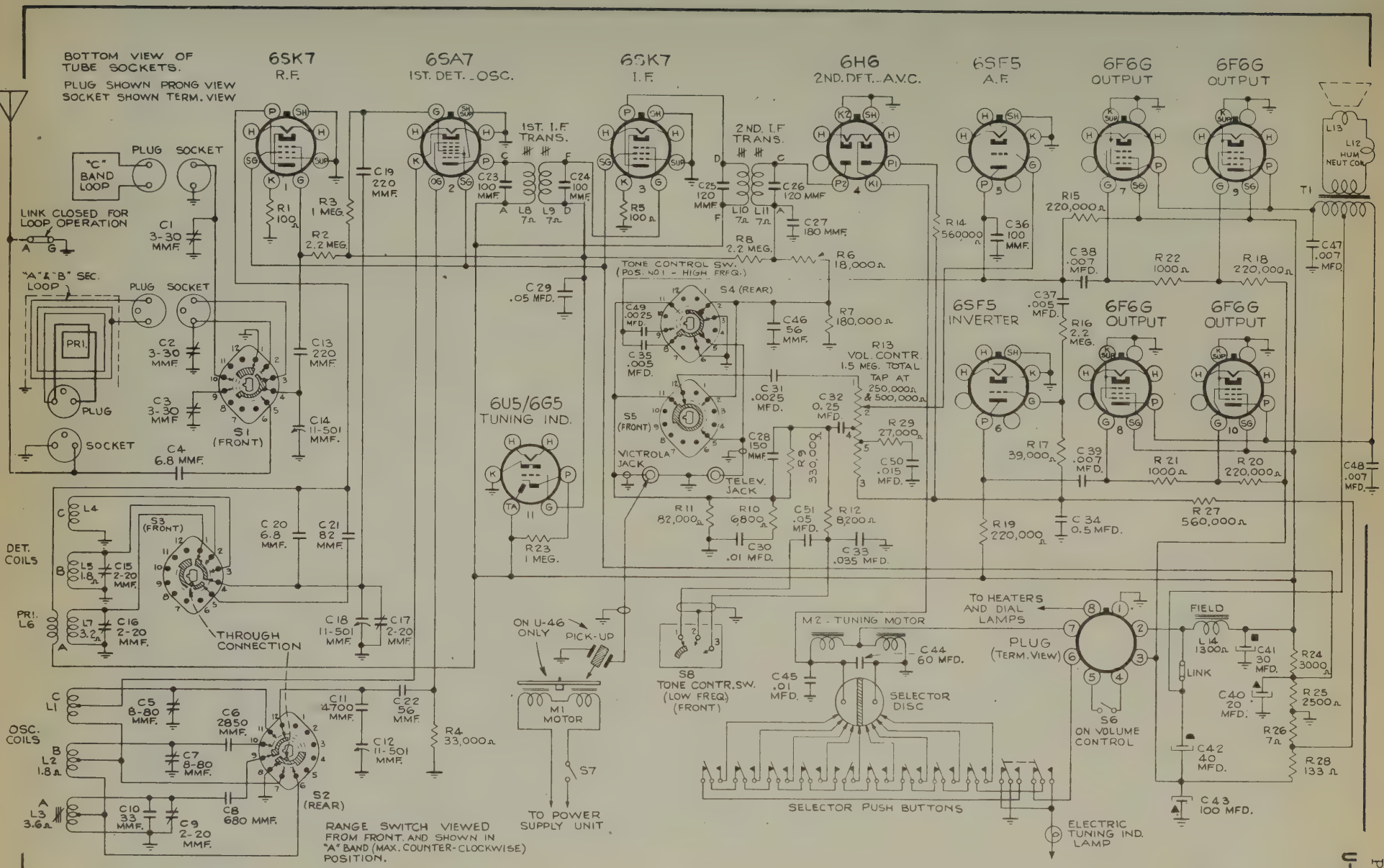
**Low-Frequency Response:**

Some instruments have tone compensation which provides the conventional amount of low-frequency response. Later production, however, has a revised circuit which predominates response below 100 cycles on one position of the "bass" or low-tone control. Should it be desirable to obtain this type of response on earlier instruments, the following changes are necessary:

(a) Replace the 82,000 ohm resistor (R11) with one of 56,000 ohms (Stock No. 12286).
(b) Replace the .035 mfd. capacitor (C33) with one of .01 mfd. (Stock No. 4937).
(c) Replace the .05 mfd. capacitor (C51) with one of .025 mfd. (Stock No. 4870).

**Add Stock No.**

4585 Hinge—Top and bottom hinges for top doors on some cabinets (hinge leaf bent 90°).




REFER TO INDEX FOR DATA ON ELECTRIC TUNING AND AUTOMATIC RECORD CHANGER

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 35018 | Board—"Antenna-Ground" board |
| 32232 | Body—Comprising one plunger body and one body spring |
| 31276 | Bracket—Band indicator mounting bracket complete except less band indicator, cord and tension spring |
| 31282 | Bracket—"Magic Eye" mounting bracket |
| 32090 | Bracket—Motor mounting bracket |
| 30766 | Cap—Rubber cap for "Magic Eye" |
| 12884 | Capacitor—Air trimmer—long (C9) |
| 32088 | Capacitor—Dial motor capacitor for 50-60 cycle models |
| 32830 | Capacitor—Trimmer comprising 2 sections of 2-20 mmfd. each (C15, C16) |
| 35019 | Capacitor—Trimmer comprising 3 sections of 3-30 mmfd. each (C1, C2, C3) |
| 34702 | Capacitor—Trimmer comprising 2 sections of 8-80 mmfd. each (C5, C7) |
| 14079 | Capacitor—6.8 mmfd. (C4, C20) |
| 12948 | Capacitor—33 mmfd. (C10) |
| 12723 | Capacitor—56 mmfd. (C22, C46) |
| 12813 | Capacitor—82 mmfd. (C21) |
| 12720 | Capacitor—100 mmfd. (C36) |
| 34699 | Capacitor—100 mmfd. (C23, C24) |
| 34700 | Capacitor—120 mmfd. (C25, C26) |
| 12725 | Capacitor—150 mmfd. (C28) |
| 13003 | Capacitor—180 mmfd. (C27) |
| 12694 | Capacitor—220 mmfd. (C13, C19) |
| 31552 | Capacitor—680 mmfd. (C8) |
| 34787 | Capacitor—2,850 mmfd. (C6) |
| 31399 | Capacitor—4,700 mmfd. (C11) |
| 34459 | Capacitor—.0025 mfd. (C31, C49) |
| 33584 | Capacitor—.005 mfd. (C35, C37) |
| 5148 | Capacitor—.007 mfd. (C38, C39, C47, C48) |
| 4937 | Capacitor—.01 mfd. (C30, C45) |
| 11315 | Capacitor—.015 mfd. (C50) |
| 5196 | Capacitor—.035 mfd. (C33) |
| 32787 | Capacitor—.05 mfd. (C29, C51) |
| 30965 | Capacitor—0.25 mfd. (C32) |
| 12741 | Capacitor—0.5 mfd. (C34) |
| 32435 | Capacitor—180 mfd. 24 volts for electric tuning motor 110 volt 25 cycle models |
| 35017 | Capacitor—Electrolytic comprising 1 section of 30 mfd. and 1 section of 20 mfd. (C30, C40) |
| 35016 | Capacitor—Electrolytic comprising 1 section of 40 mfd. and 1 section of 100 mfd. (C42, C43) |
| 34579 | Coil—Oscillator coil |
| 34697 | Coil—Det. Coil |
| 35015 | Condenser—Variable tuning condenser |
| 31231 | Contact—Contact tip for station setting contact |
| 31971 | Contact—Push button switch contact (11 contacts riveted on insulating strip) |
| 31972 | Contact—Push button switch contact (14 contacts riveted on insulating strip) |
| 35022 | Control—H.F. tone control |
| 35026 | Control—L.F. tone control |
| 35023 | Control—Volume control and power switch |
| 32634 | Cord—Band indicator cord |
| 32635 | Cord—Station selector indicator drive cord |
| 32713 | Core—Adjusting core and stud for oscillator coil |
| 32096 | Disc—Friction disc and pinion gear |
| 32091 | Drive—Friction drive gear assembly |
| 31273 | Drum—Variable tuning condenser drive drum |
| 32093 | Flywheel—Flywheel for rear end of motor shaft |
| 31239 | Gear—Knob shaft drive gear and hub |
| 31304 | Indicator—Band indicator strip |
| 31480 | Lamp—Station setting indicator lamp |
| 11891 | Lamp—Dial lamp—Mazda No. 44 |
| 32095 | Motor—Dial drive motor, capacitor, friction roller, and damper for 50-60 cycle models |
| 32434 | Motor—Electric tuning drive motor, 110 volt, 25 cycle |
| 18469 | Plate—Bakelite mounting plate for electrolytic capacitor ..... net |
| 31228 | Plate—Contact plate for station setting contacts less contacts |
| 31969 | Plate—Lock plate for push button switch comprising 10 contact locks in one strip |
| 31227 | Plate—Selector mounting plate—mounts on rear of variable tuning condenser |
| 12493 | Plug—5 contact female plug for speaker cable |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 31272 | Pulley—Range switch knob shaft pulley for band indicator cord |
| 31271 | Pulley—Tuning knob shaft drive cord pulley |
| 35025 | Receptacle—Receptacle for power input cable |
| 14439 | Resistor—100 ohms, ½ watt (R1, R5) |
| 14720 | Resistor—1,000 ohms, ½ watt (R22, R21) |
| 12285 | Resistor—6,800 ohms, ½ watt (R10) |
| 14075 | Resistor—8,200 ohms, ½ watt (R12) |
| 13045 | Resistor—18,000 ohms, ½ watt (R6) |
| 12738 | Resistor—27,000 ohms, ½ watt (R29) |
| 12454 | Resistor—33,000 ohms, ½ watt (R4) |
| 12266 | Resistor—39,000 ohms, ½ watt (R17) |
| 14023 | Resistor—82,000 ohms, ½ watt (R11) |
| 13898 | Resistor—180,000 ohms, ½ watt (R7) |
| 12264 | Resistor—220,000 ohms, ½ watt (R19, R15, R18, R20) |
| 14983 | Resistor—330,000 ohms, ½ watt (R9) |
| 12486 | Resistor—560,000 ohms, ½ watt (R27, R14) |
| 12013 | Resistor—1 megohm, 1/10 watt (R23) |
| 13730 | Resistor—1 megohm, ½ watt (R3) |
| 12679 | Resistor—2.2 megohm, ½ watt (R2, R8, R16) |
| 35020 | Resistor—Voltage divider tapped at 3,000 ohms, 2,500 ohms, 7 ohms and 133 ohms |
| 14887 | Retainer—Drive cord pulley retainer |
| 35024 | Rod—Trimmer capacitor adjusting rod |
| 32086 | Roller—Rubber friction roller for front end of motor shaft |
| 31233 | Rotor—Selector rotor disc—mounts on rear of variable tuning condenser shaft |
| 5042 | Screw—No. 8-32-1/8-inch set screw for pulley Stock No. 31271 |
| 4669 | Screw—No. 8-32-3/8-inch square head set screw for drum Stock No. 31273 |
| 31681 | Shaft—Dial drive knob shaft |
| 34575 | Socket—3-contact female, loop socket |
| 31364 | Socket—Insulated dial lamp socket |
| 31365 | Socket—Non-insulated dial lamp socket |
| 13871 | Socket—"Magic Eye" socket |
| 33514 | Socket—"Phonograph-Television" socket |
| 31251 | Socket—Tube socket |
| 31232 | Spring—Contact tip spring for station setting contact |
| 13638 | Spring—Indicator drive cord spring |
| 31970 | Spring—Push button lock bar spring |
| 31230 | Spring—Station setting contact body spring |
| 31418 | Spring—Variable condenser drive cord spring |
| 35021 | Switch—Range switch |
| 31968 | Switch—Station selector push button switch complete |
| 34698 | Transformer—First i-f transformer |
| 34524 | Transformer—Second i-f transformer |
| 32231 | Washer—comprising 1 metal washer, 2 fibre washers and 1 solder lug for station selector plunger |
| 32094 | Washer—Spring washer for mounting damper |
| | **POWER SUPPLY UNIT ASSEMBLIES** |
| 11765 | Lamp—Pilot lamp, —Model U46 |
| 35052 | Plug—Power input cable plug |
| 30868 | Plug—2 contact female plug for motor lead and for compartment lamp—Model U46 |
| 31364 | Socket—Pilot lamp socket—Model U46 |
| 31251 | Socket—Tube socket |
| 35249 | Transformer—Power transformer—110 volt, 25 cycle |
| 35250 | Transformer—Power transformer—Univ. 60 cycle |
| 35027 | Transformer—Power transformer—110 volt, 60 cycle |
| | **PICKUP AND ARM ASSEMBLIES** Model U46 |
| 34011 | Arm—Pickup arm shell |
| 33905 | Crystal—Pickup cartridge |
| 34013 | Pin—Used to fasten pivot arm in pickup arm shell |
| 33529 | Screw—Needle screw |
| 34012 | Shaft—Pickup pivot shaft and pivot arm |
| | **MOTOR BOARD MECHANISM** Model U46 |
| 33998 | Base—Tone arm mounting base |
| 33996 | Board—Motor board complete with all riveted and welded posts and brackets—less operating mechanisms |
| 32556 | Cable—Shielded pickup cable (8) |
| 33999 | Cup—Needle cup (6) |
| 33997 | Escutcheon—Index escutcheon |
| 31151 | Guide—Lift cable guide |
| 31150 | Mounting—Pickup arm base rubber mounting complete |
| 34875 | Switch—Pickup shorting switch (44) |
| | **OPERATING MECHANISM** Model U46 |
| 33580 | Arm—Drive arm and bushing for flexible coupling (motor end) |
| 34009 | Arm—Drive arm and gear for flexible coupling (T.T. end) (24) |
| 33984 | Bracket—Pickup locating lever mounting bracket (3) |
| 33987 | Cam—Cam and gear complete (42) |
| 6808 | Clutch—Friction clutch complete (5) |
| 31116 | Finger—Friction finger complete (7) |
| 33581 | Frame—Flexible coupling metal frame |
| 32879 | Gear—Rack gear for front left hand record post (41) |
| 32880 | Gear—Rack gear for rear right hand record post (40) |
| 31121 | Gear—Record post gear (10) |
| 33982 | Guide—Main lever spring guide (11) |
| 34999 | Lever—Locating lever and pawl assembly (14) |
| 31137 | Lever—Index lever pawl (13) |
| 34000 | Lever—Index lever complete (12) |
| 33985 | Lever—Main lever complete (15) |
| 34007 | Lever—Mercury switch actuating lever (29) |

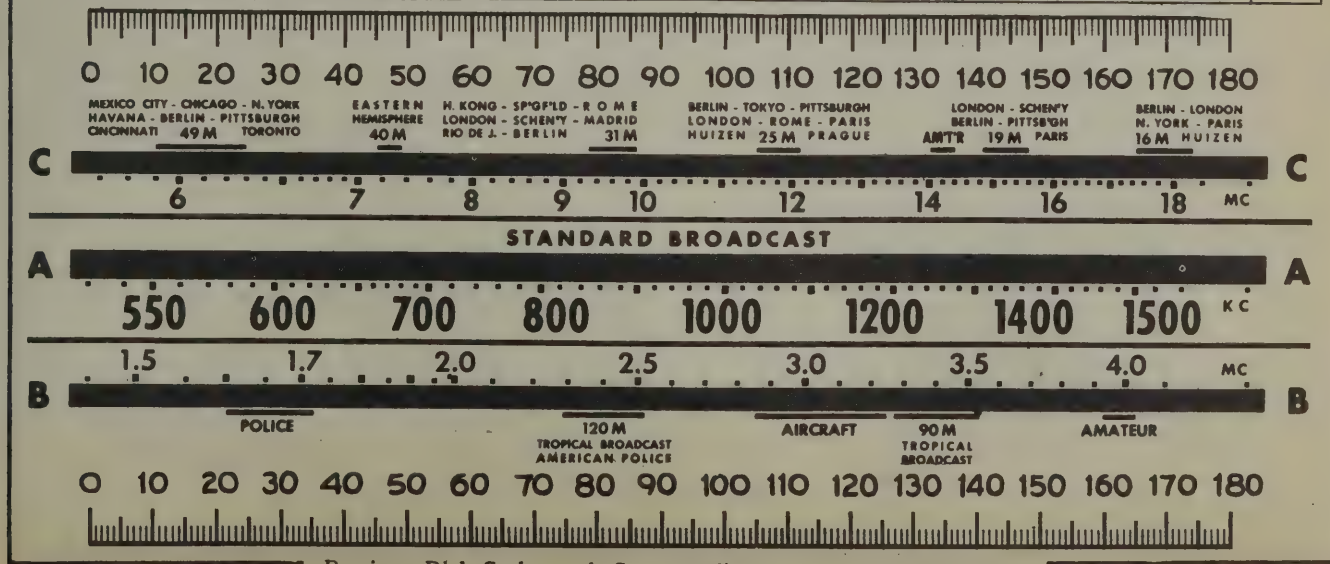
## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31140 | Lever—Pickup lift cable lever and spring assembly (16) |
| 31130 | Lever—Record separator elevating lever complete with adjusting screws (18) |
| 34002 | Lever—10-inch and 12-inch record discriminating lever (17) |
| 31132 | Lever—Trip detaining lever (19) |
| 34014 | Lever—Trip lever and cam complete (20) |
| 31131 | Lever—Trip regulator lever (21) |
| 34086 | Link—Index lever link |
| 34004 | Link—Mercury switch disengaging lever |
| 31133 | Pawl—Trip pawl assembly (22) |
| 31124 | Pin—Record post drive pin (23) |
| 31535 | Pin—Turntable spindle pin |
| 30870 | Plug—2 contact male plug for switch leads |
| 34008 | Roller—Mercury switch lead roller |
| 31147 | Rubber—1 set of rubber strips for flexible coupling |
| 31118 | Screw—No. 10-32 cone-pointed set screw |
| 32869 | Screw—No. 10-32 set screw |
| 34001 | Screw—Record separator elevator lever ball point adjusting screw |
| 33983 | Screw—Record separator shelf elevating lever screw |
| 14195 | Screw—Set screw for flexible coupling |
| 31117 | Screw—Trip lever and cam adjusting screw |
| 33990 | Separator—Record separator knife (25) |
| 33988 | Shaft—Record post gear shaft (34) |
| 33989 | Shelf—Record post shelf assembly (27) |
| 31141 | Spindle—Turntable spindle |
| 3676 | Spring—Cam pawl tension spring |
| 31136 | Spring—Index lever pawl spring (30) |
| 32436 | Spring—Locating lever and pawl spring (35) |
| 32882 | Spring—Main lever tension spring (43) |
| 32868 | Spring—Mercury switch cam spring (49) |
| 34005 | Spring—Mercury switch disengaging lever spring (50) |
| 3666 | Spring—Pickup lift cable lever spring (31) |
| 14190 | Spring—Pickup locating lever pawl spring (28) |
| 33994 | Spring—Pickup locating lever spring (9) |
| 14191 | Spring—Trip detaining lever spring (33) |
| 32867 | Spring—Trip lever cam tension spring |
| 34006 | Support—Mercury switch support bracket and terminal board |
| 32866 | Switch—Mercury switch (4) |
| 34003 | Turntable—Record turntable |
| 31143 | Washer—Turntable shim washers |

### MOTOR ASSEMBLIES
Model U46

| | |
|---|---|
| 31617 | Bracket—Governor and bearing bracket |
| 31626 | Coil—Field coil and laminations for 110 volts, 25 cycles motor |
| 31619 | Coil—Field coil and laminations for 110 volts, 50/60 cycles motor |
| 31624 | Governor—Complete for 110 volts, 25 cycles motor |
| 11703 | Governor—Complete for 110 volts, 50/60 cycles motor |
| 31448 | Motor—Motor 110 volts, 25 cycles |
| 31163 | Motor—Motor 110 volts, 50-60 cycles—net |
| 30870 | Plug—2 prong male plug for motor leads |
| 31616 | Screw—Rotor thrust bearing screw and nut |
| 31620 | Screw—Speed regulator screw and nut |
| 30868 | Socket—2 contact female socket for motor leads |
| 31636 | Spindle—Motor spindle and gear for 110 volts, 25 cycles motor |
| 31634 | Spindle—Motor spindle and gear for 110 volts, 60 cycles and 110 volts, 50-60 cycles motors. |

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (RL-76B-5)** |
| 13867 | Cap—Dust cap |
| 14922 | Coil—Field coil (1,300 ohms) |
| 14604 | Coil—Neutralizing coil |
| 14802 | Cone—Cone complete with voice coil |
| 34728 | Diffuser—Speaker diffuser |
| 31539 | Plug—5-prong male speaker plug |
| 12568 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35046 | Bearing—Antenna loop bearing comprising pivot and spindle |
| X-816 | Board—Baffle board and grille cloth—Model K130 |
| 35033 | Button—Push button |
| 13103 | Cap— lamp cap—Model U46 |
| X-815 | Cloth—Grille cloth—Model U46—net |
| 31456 | Cover—Marker protective cover |
| 31359 | Cushion—Push button rubber cushion |
| 35035 | Dial—Glass dial scale |
| 35045 | Dowel—One foot of dowel material |
| 35034 | Escutcheon—Dial scale escutcheon—less dial scale and push buttons |
| 34583 | Frame—Frame only for "C" band antenna loop—less wire and plug |
| 32083 | Frame—Dial frame complete—less dial, pointer and carriage, pointer carriage guide rods |
| 35038 | Gasket—Rubber gasket for motorboard—Model U46 |
| 35043 | Hinge—Bottom door hinge—L.H.—Model U46 |
| 35044 | Hinge—Bottom door hinge—R.H.—Model U46 |
| 34870 | Hinge—R.H. top door hinge for U46 |
| 34871 | Hinge—L.H. top door hinge for U46 |
| 4585 | Hinge—Top door hinges—R.H. and L.H. (Model K-130) |
| 31305 | Indicator—Station selector indicator and carriage |
| 35041 | Knob—Magic Antenna or tone control knob |
| 35031 | Knob—Range switch, tuning or volume control and power switch knob |
| 4206 | Lamp—Compartment lamp —Model U46. |
| 35030 | Loop—"A" and "B" band antenna loop |
| 35036 | Marker—"Dial Tuning" marker |
| 33973 | Marker—Push button call letter markers |
| 31470 | Mounting—Motorboard suspension springs, lockwashers and screws—Model U46 |
| 35029 | Mounting—One set speaker mounting hardware consisting of rubber grommets and eyelets |
| 30870 | Plug—2-prong male plug for motor leads—Model U46 |
| 34990 | Plug—2-prong male plug for "C" band antenna loop |
| 32641 | Plug—3-prong male plug for "A" and "B" band loop |
| 35042 | Pull—Door pull—Model U46 |
| 35050 | Pull—Door pull—Model K130 |
| 31514 | Receptacle—Needle receptacle—Model U46 |
| 4669 | Screw—No 8-32 square head set screw for holding flexible shaft to antenna loop |
| 35184 | Shade—Compartment lamp shade—Model U46. |
| 35037 | Shaft—Flexible shaft to turn loop (7½-inches) Model U46 |
| 35049 | Shaft—Flexible shaft to turn loop (13½-inches) Model K130 |
| 34491 | Shaft—Pointer carriage guide rods |
| 35032 | Shaft—Push button pivot shaft |
| 35040 | Socket—Compartment lamp socket—Model U46 |
| 14270 | Spring—Retaining spring for knobs Stock 35031 |
| 35039 | Switch—Compartment lamp switch—Model U46 |


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
MEXICO CITY - CHICAGO - N. YORK
HAVANA - BERLIN - PITTSBURGH
CINCINNATI 49 M TORONTO
EASTERN HEMISPHERE 40 M
H. KONG - SP'GF'LD - R O M E
LONDON - SCHEN'Y - MADRID
RIO DE J. - BERLIN 31 M
BERLIN - TOKYO - PITTSBURGH
LONDON - ROME - PARIS
HUIZEN 25 M PRAGUE
LONDON - SCHEN'Y
BERLIN - PITTSB'GH
AM'T'R 19 M PARIS
BERLIN - LONDON
N. YORK - PARIS
16 M HUIZEN
C
C
6 7 8 9 10 12 14 16 18 MC
STANDARD BROADCAST
A
A
550 600 700 800 1000 1200 1400 1500 KC
1.5 1.7 2.0 2.5 3.0 3.5 4.0 MC
B
B
POLICE
120 M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90 M TROPICAL BROADCAST
AMATEUR
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

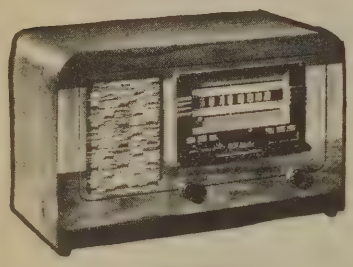
*Receiver Dial Scales and Corresponding 0-180° Calibration Scales*

# MODELS K-50 T-55 and T-56

Chassis Nos. RC-418A RC-418 RC-418

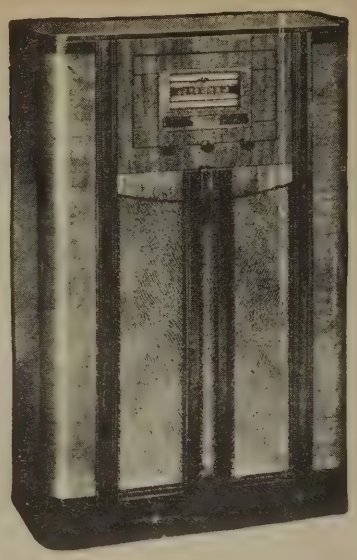
2ND PROD. RC-497

## Five-Tube, Single-Band, A-C, Superheterodynes



*Model T-55*

*Model T-56*



*Model K-50*

## Electrical Specifications

FREQUENCY RANGE

Standard Broadcast ..... 540-1,720 kc

Standard Broadcast ..... RC-497 ONLY .... 540-1,560 kc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SA7 ..... 1st Detector-Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6SQ7 .. 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-6F6-G ..... Power Output
(5) RCA-5Y3-G ..... Rectifier

PILOT LAMP (1) ..... Mazda No. 51, 6.3 volts, 0.20 amp.

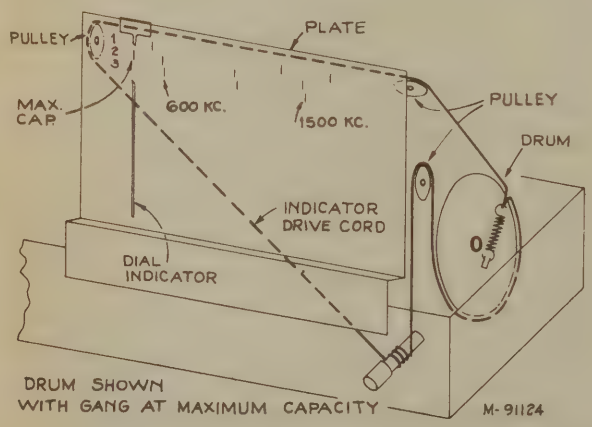
POWER OUTPUT RATING

Undistorted ..... 2 watts
Maximum ..... 4 watts

POWER SUPPLY RATINGS

Rating A ..... 105-125 volts, 50-60 cycles, 75 watts
Rating B ..... 105-125 volts, 25-60 cycles, 75 watts
Rating C ..... 105-125, 200-250 volts, 50-60 cycles, 75 watts

| LOUDSPEAKER | T55 | K50 |
|---|---|---|
| Type | 5 inch electrodynamic | 12 inch electrodynamic |
| V. C. impedance at 400 cycles | 3.4 ohms | 2.2 ohms |




*Dial-Indicator and Drive Mechanism*

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

**Power line antenna:** Model K50 is provided with a built in power line antenna. To use this antenna a jumper should be connected between terminals "A" and "L" on the antenna terminal strip. If an outside antenna is used it should be connected to "A", no connection being made to terminal "L".

## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

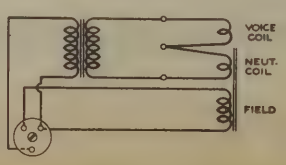
2. Set the radio-phono switch to "radio" position and accurately tune in the station for which the first button is to be set.

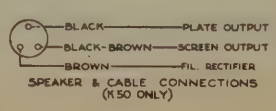
3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons

6. Insert the station marker tabs in the recesses above the push-buttons.




SPEAKER & CABLE CONNECTIONS (K50 ONLY)

# Alignment Procedure



**Precautionary Lead Dress:**

Before proceeding with alignment dress power cord leads away from 6SQ7 socket and close as possible to end of chassis; dress ground wire to volume control between power leads and audio grid; and dress lead from phono switch to volume control as far away from power leads as possible.

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown on the chassis schematics.

**Output Meter Alignment.**—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.** — For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

**Calibration Marks.** — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.** — With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

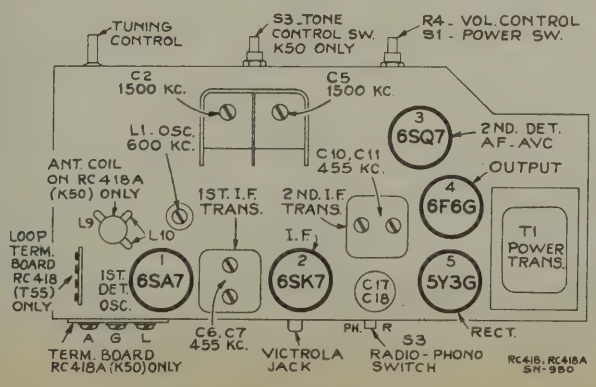
## RC-418, RC-418A

| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Antenna terminal | 455 kc | Quiet Point between 1,720-1,500 kc | C10 and C11 (2nd I-F trans.) |
| 2 | Antenna terminal | | | C6 and C7 (1st I-F trans.) |
| 3 | Ant. terminal in series with 200 mmfd. | 1,500 kc | 1,500 kc calibration mark | C5 (osc.) C2 (ant.) |
| 4 | | 600 kc | 600 kc calibration mark | L1 (osc.) (Rock in) |
| 5 | Repeat step 3 | | | |

## RC-497

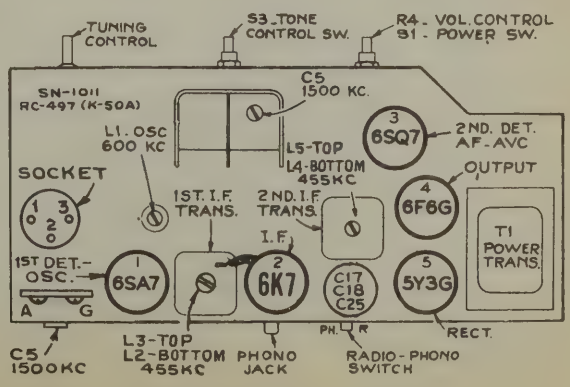
| Steps | Connect test-osc. output to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I-F grid through 0.1 mfd. capacitor and ground | 455 kc | Quiet point between 600-700 kc | L4 and L5 (2nd I-F trans.) |
| 2 | 1st det. grid through 0.1 mfd. capacitor and ground | | | L2 and L3 (1st I-F trans.) |
| 3 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 1,500 kc | 1,500 kc | C2 antenna C5 oscillator |
| 4 | | 600 kc | Rock at 600 kc | L1 oscillator while rocking |
| 5 | | 1,500 kc | 1,500 kc | C2 antenna C5 oscillator* |

When making adjustments 3 to 5 inclusive the chassis must be in the cabinet, the loop connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.



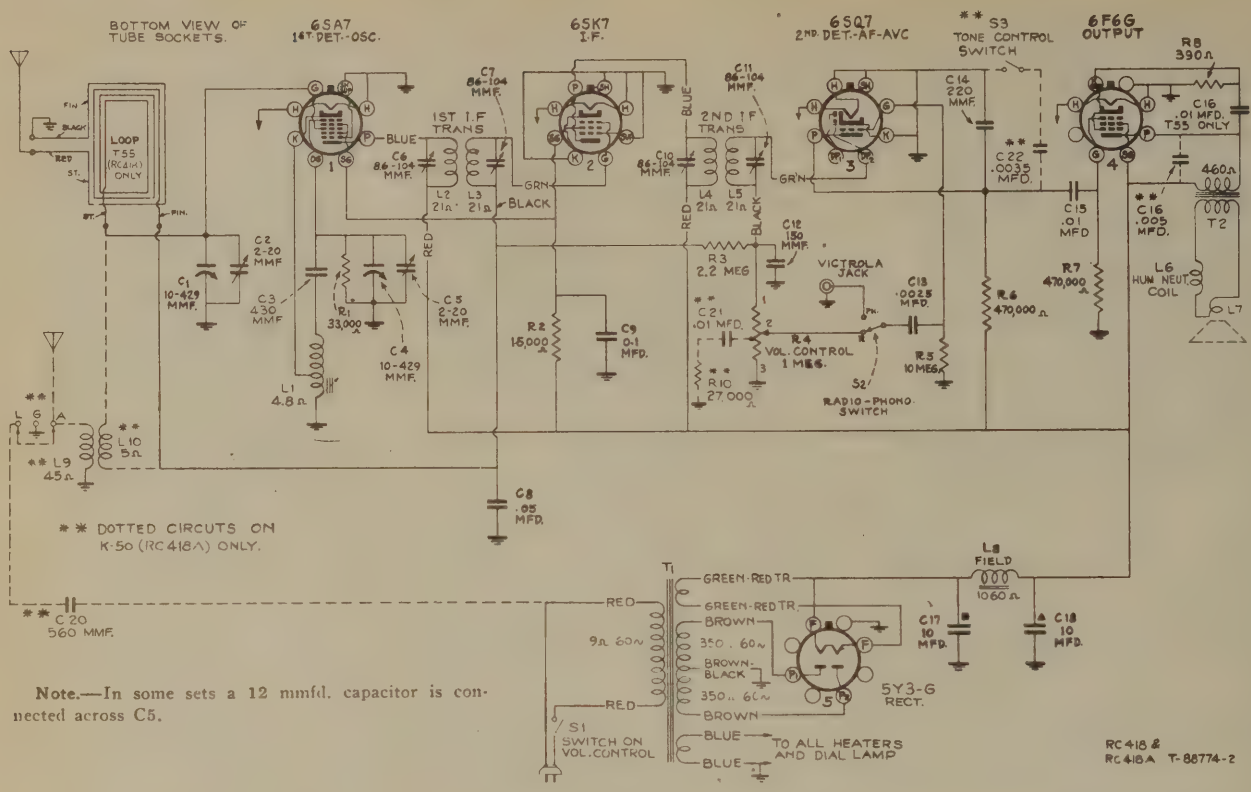

*Tube and Trimmer Locations*

**MODELS K-50 (RC-418A) T-55, T-56 (RC-418)**




*Tube and Trimmer Locations*

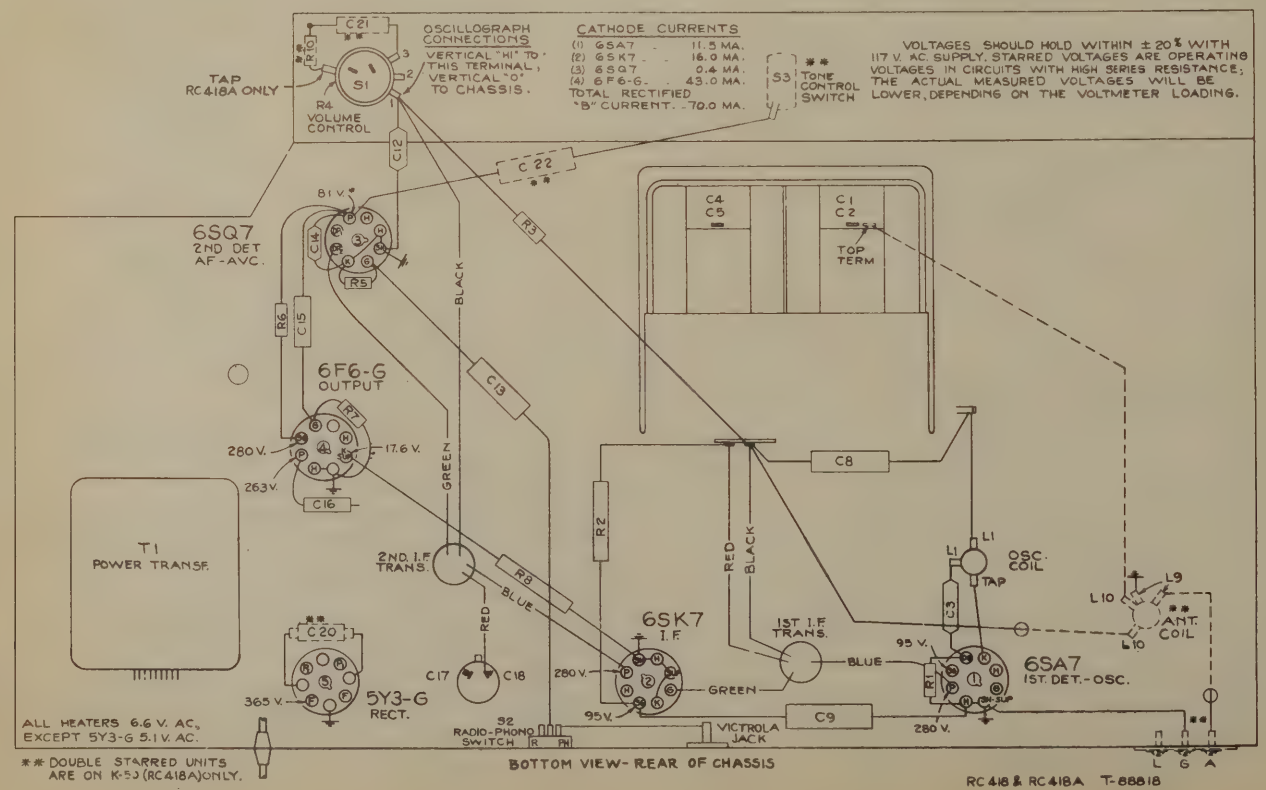
**MODEL K-50 (RC-497)**



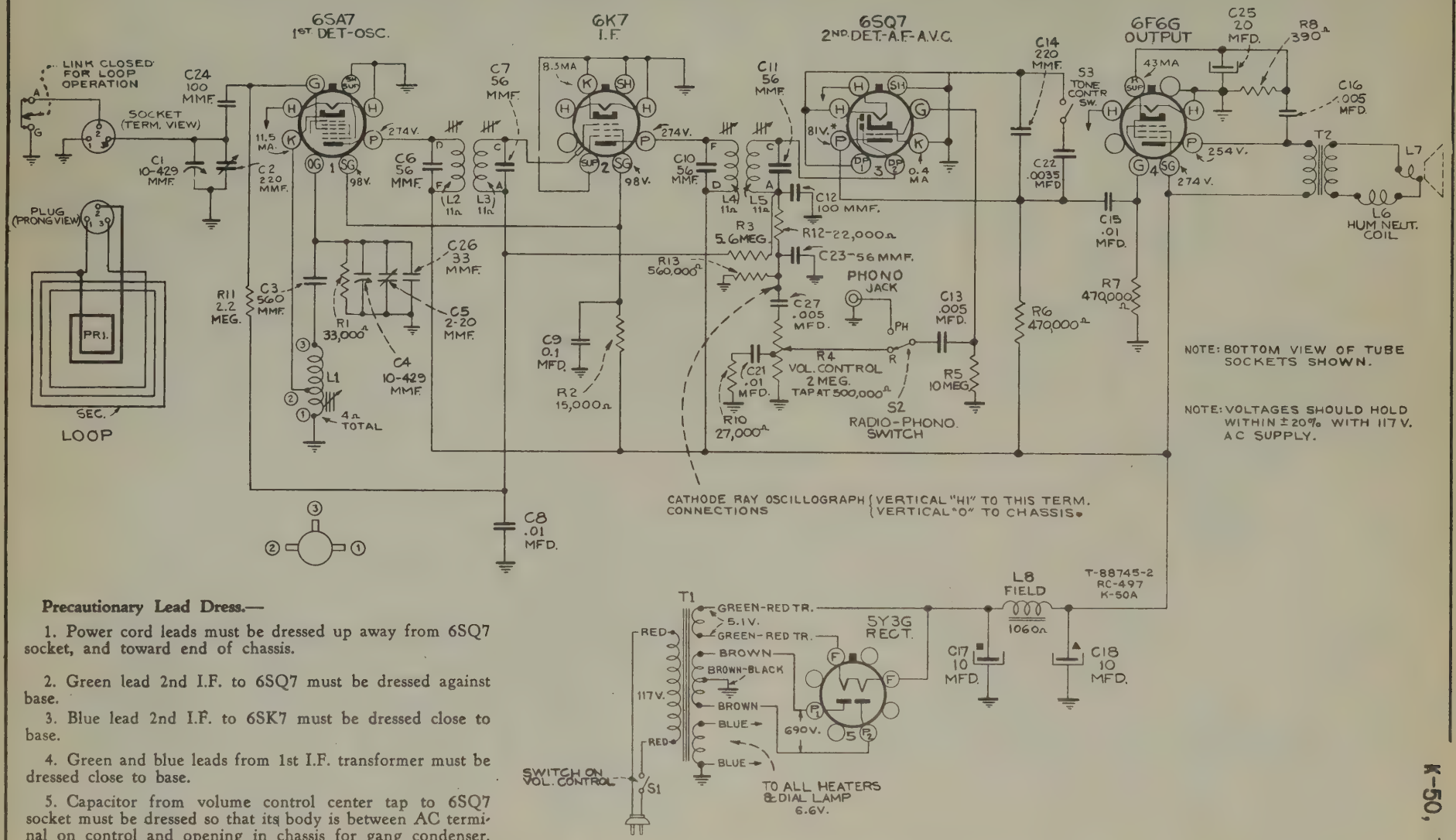

Note.—In some sets a 12 mmfd. capacitor is connected across C5.

*Schematic Circuit Diagram*

## MODELS K-50 (RC-418A) T-55, T-56 (RC-418)




*R-F Wiring Diagram and Socket Voltages*




*Schematic Circuit Diagram* **MODEL K-50 (RC-497)**

**Precautionary Lead Dress.—**

1. Power cord leads must be dressed up away from 6SQ7 socket, and toward end of chassis.

2. Green lead 2nd I.F. to 6SQ7 must be dressed against base.

3. Blue lead 2nd I.F. to 6SK7 must be dressed close to base.

4. Green and blue leads from 1st I.F. transformer must be dressed close to base.

5. Capacitor from volume control center tap to 6SQ7 socket must be dressed so that its body is between AC terminal on control and opening in chassis for gang condenser.

6. Red lead from "L" terminal on antenna board to 5Y3G socket must be dressed against base.

7. Green lead from gang to 6SA7 socket must be dressed toward side apron away from other parts.

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | Model T-55 (RC-418)<br>Model K-50 (RC-418A) |
| 33719 | Belt—Tuning unit push arm belt |
| 33718 | Board—Antenna-Ground terminal board |
| 12725 | Capacitor—150 mmfd. (C12) |
| 12694 | Capacitor—220 mmfd. (C14) |
| 32599 | Capacitor—430 mmfd. (C3) |
| 12537 | Capacitor—560 mmfd. (C20) Model K50 |
| 5107 | Capacitor—.0025 mfd. (C13) |
| 30303 | Capacitor—.0035 mfd. (C22) Model K50 |
| 33584 | Capacitor—.005 mfd. (C16) Model K50 |
| 4937 | Capacitor—.01 mfd. (C15, C16, C21) (C16 in Model T55 only) (C21 in Model K50 only) |
| 32787 | Capacitor—.05 mfd. (C8) |
| 4839 | Capacitor—0.1 mfd. (C9) |
| 33775 | Coil—Antenna coil (L9, L10) Model K50 |
| 33724 | Coil—Oscillator coil (L1) |
| 32342 | Condenser—Electrolytic, 2 sections 10 mfd. each (C17, C18) |
| 33630 | Control—Tone control (S3) Model K50 |
| 32634 | Cord—Drive cord |
| 33633 | Indicator—Dial scale pointer |
| 11765 | Lamp—Dial lamp |
| 33431 | Link—Antenna terminal board link |
| 33721 | Loop—Antenna loop Model T55 |
| 33727 | Plate—Dial plate assembly |
| 31388 | Resistor—390 ohms, 1 watt (R8) |
| 33489 | Resistor—15,000 ohms, 2½ watts (R2) |
| 12738 | Resistor—27,000 ohms, ½ watt (R10) Model K50 |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12285 | Resistor—470,000 ohms, ½ watt (R6, R7) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 13601 | Resistor—10 meg., ½ watt (R5) |
| 33725 | Shaft—Tuning knob shaft |
| 31364 | Socket—Dial lamp socket |
| 14278 | Socket—Phono-input socket |
| 5119 | Socket—3 contact female for speaker cable—Model K50 |
| 31319 | Socket—Tube socket |
| 33720 | Spring—Push arm return spring |
| 33634 | Switch—Radio-Phono switch (S2) |
| 33722 | Transformer—First i-f transformer (L2, L3, C6, C7) |
| 33723 | Transformer—Second i-f transformer (L4, L5, C10, C11) |
| 31575 | Transformer—Power transformer 110-220 volts, 60 cycle (T1) |
| 33619 | Transformer—Power transformer 105-120 volts, 25-60 cycle (T1) |
| 33112 | Transformer—Power transformer 105-120 volts, 50-60 cycle (T1) |
| 33631 | Volume control and power switch (R4, S1) Model T55 |
| 33776 | Volume control and power switch (R4, S1) Model K50 |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES** |
| | (Model T55)<br>(RL-78-6) |
| 32907 | Cap—Cone center dust cap |
| 32906 | Coil—Hum neutralizing coil (L6) |
| 33601 | Coil—Speaker field coil (L8) |
| 32904 | Cone—Speaker cone and voice coil (L7) |
| 32905 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES** |
| | (Model K50)<br>(RL-70J-2) |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L6) |
| 33116 | Coil—Speaker field coil (L8) |
| 31275 | Cone—Speaker cone and voice coil (L7) |
| 5118 | Plug—3 contact male for speaker |
| 33779 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33637 | Bezel—Dial escutcheon |
| 33731 | Button—Push button |
| 33730 | Clamp—Dial mounting clamp |
| 31456 | Covers—8-protective covers for push button markers |
| 33729 | Dial—Glass dial scale |
| 30863 | Knob—Tuning or volume control knob |
| 33973 | Marker—Station selector marker |
| 30900 | Spring—Knob or push button retaining spring |
| | **Additional Replacement Parts:** |
| | **Stock No.** |
| 30585 | Spring—Drive cord spring |
| 33735 | Screw—Push-button lock screw |

## MODEL T-55-S (Silver)

**Technical Information and Service Data:**

Model T-55-S is similar to Model T-55, except for the following parts used in T-55-S:

| Stock No. | |
|---|---|
| 35180 | Button—Push button |
| 35181 | Escutcheon—Dial escutcheon |
| 35179 | Knob—Tuning or volume control knob |

## MODEL T-56, RC-418

**Technical Information and Service Data:**

Model T-56 has the same chassis as T-55. For Service Data and replacement parts, refer to Model T-55, and these additional parts used in T-56:

| Stock No. | |
|---|---|
| X-834 | Baffle—Baffle board and grille cloth. |
| 35393 | Decalcomania—"Television" |
| 35392 | Decalcomania—"RCA Victor" |

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | (RC-497) |
| 33719 | Belt—Adjusting belt for push button arms |
| 34724 | Board—Antenna-Ground board |
| 33817 | Capacitor—Mica trimmer comprising 1 section of 2-20 mmfd. (C2, C5) |
| 12948 | Capacitor—33 mmfd. (C26) |
| 30949 | Capacitor—56 mmfd. (C6, C7, C10, C11) |
| 12723 | Capacitor—56 mmfd. (C23) |
| 12720 | Capacitor—100 mmfd. (C12, C24) |
| 12694 | Capacitor—220 mmfd. (C14) |
| 12537 | Capacitor—560 mmfd. (C3) |
| 30303 | Capacitor—.0035 mfd. (C22) |
| 33584 | Capacitor—.005 mfd. (C13, C16, C27) |
| 4937 | Capacitor—.01 mfd. (C8, C15, C21) |
| 4839 | Capacitor—0.1 mfd. (C9) |
| 32240 | Capacitor—Electrolytic comprising 2 sections of 10 mfd. and 1 section of 20 mfd. |
| 33724 | Coil—Oscillator coil |
| 33635 | Condenser—6 button tuning condenser |
| 33630 | Control—Tone control |
| 34796 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 33633 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 34795 | Plate—Dial plate complete less tuner and dial |
| 5119 | Plug—3 contact female plug for speaker cable |
| 31388 | Resistor—390 ohms, 1 watt (R8) |
| 33489 | Resistor—15,000 ohms, 2½ watt (R2) |
| 13998 | Resistor—22,000 ohms, ½ watt (R12) |
| 12738 | Resistor—27,000 ohms, ½ watt (R10) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12285 | Resistor—470,000 ohms, ½ watt (R6, R7) |
| 12486 | Resistor—560,000 ohms, ½ watt (R13) |
| 12679 | Resistor—2.2 megohms, ½ watt (R11) |
| 11668 | Resistor—5.6 megohms, ½ watt (R3) |
| 13801 | Resistor—10 megohms, ½ watt (R5) |
| 33735 | Screw—Push button adjusting and locking screw |
| 33725 | Shaft—Drive shaft |
| 34411 | Shaft—Drive shaft |
| 34723 | Socket—Antenna loop socket |
| 31364 | Socket—Dial lamp socket |
| 14278 | Socket—Phonograph input socket and jack |
| 31319 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 33720 | Spring—Push button arm return spring |
| 33634 | Switch—"Radio-Phono" switch |
| 31575 | Transformer—Power transformer (100-120 and 200-240) volt 50-60 cycle |
| 33112 | Transformer—Power transformer 105-125 volt, 50-60 cycle |
| 33618 | Transformer—Power transformer 110 volt, 25-60 cycle |
| 32263 | Transformer—1st I.F. transformer |
| 34719 | Transformer—2nd I.F. transformer |
| 33726 | Washer—"C" washer for drive shaft |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33731 | Button—Push button |
| 31456 | Cover—Protective cover for push button markers |
| 34801 | Dial—Glass dial scale |
| 33637 | Escutcheon—Dial and push button escutcheon |
| 30863 | Knob—Tuning, tone control, or volume control knob |
| 34800 | Loop—Antenna loop |
| 33973 | Marker—Station markers |
| 32641 | Plug—3 prong male plug for antenna loop |
| 30900 | Spring—Retaining spring for knob Stock 30863 and Button Stock 33731 |

# MODELS O-50 and R-60

## Three-Tube Electric Phonographs

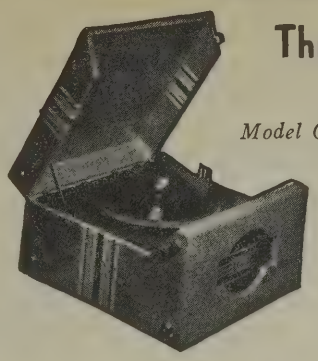
**Increasing Victrola Gain:**

The over-all amplification of these models, when used as Victrolas, is limited by the voltage divider circuit comprised of a resistor in series with, and a capacitor across the pickup circuit. Values of these components are established on the basis of:

(a) Average available voltage output from pickup under average climatic conditions.
(b) Degree of "rumble" likely with given amplification.
(c) Danger of "microphonic howl" with high amplification.
(d) Possible consumer reaction to overload occurring at a low volume control setting with heavily cut records.

If these points are kept in mind, additional gain may be obtained, wherever desired, by decreasing the value of the pickup shunt capacitor; C-1 in Model O-50.

The substitute capacitor should be approximately ½ to ⅓ the value of the original.



*Model O-50*

**RCA Victrola R-60.**

## Electrical and Mechanical Specifications

TUBE COMPLEMENT

(1) RCA—6SF5 ..... A-F Amplifier
(2) RCA—6F6-G ..... Output
(3) RCA—5Y3-G ..... Rectifier

POWER SUPPLY RATINGS

A-6 ..... 105-125 volts, 60 cycles, 90 watts
A-5 ..... 105-125 volts, 50 cycles, 90 watts

LOUDSPEAKER O-50

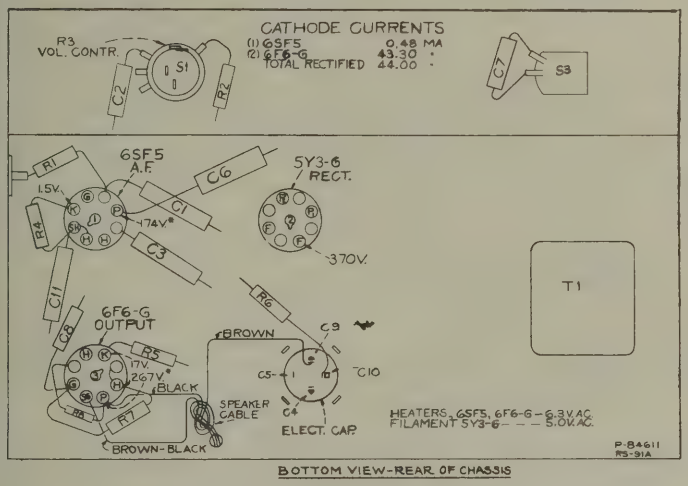
Type ..... 8 inch electrodynamic
V. C. Impedance at 400 cycles ..... 3.2 ohms

PICKUP

Type ..... Crystal
Impedance ..... 100,000 ohms at 400 cycles
Average Output .... 1½ volts at 1,000 cycles with 250,000 ohms load

LOUDSPEAKER (RL-79-2) R60

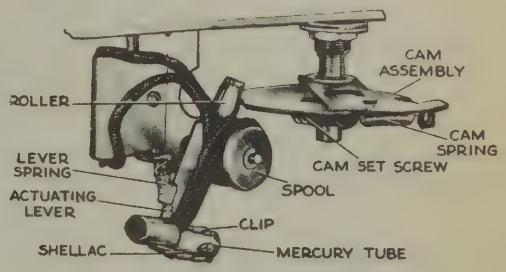
Type ..... 6-inch electrodynamic
V. C. Impedance at 400 cycles ..... 3.4 ohms




BOTTOM VIEW-REAR OF CHASSIS

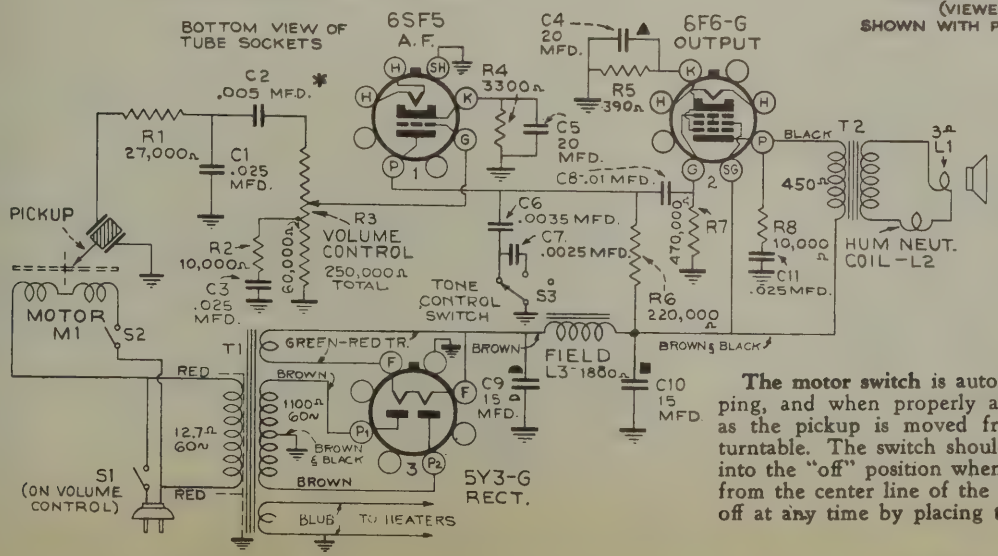
***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.




MERCURY SWITCH MECHANISM
(VIEWED FROM FRONT SHOWN WITH PICKUP IN REST POSITION)

*Parts Layout and Socket Voltages*




***NOTE: MODEL O-50 C2 IS 1800 MMFD**

**The motor switch** is automatic for both starting and stopping, and when properly adjusted, will turn the motor on as the pickup is moved from the pickup rest toward the turntable. The switch should be adjusted so that it will snap into the "off" position when the pickup needle is 1¾ inches from the center line of the spindle. The motor may be shut off at any time by placing the pickup on the pickup rest.

# O-50, R-60

The phonograph motor is a self-starting, constant-speed induction type. It should be lubricated every six months by applying a few drops of light machine oil to the top and bottom motor spindle bearings, to the turntable spindle, and to the turntable drive wheel bearing.

CAUTION: Keep oil away from drive bushing on top of motor spindle and from rubber driving tire on turntable drive wheel.

## REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL O-50** |
| | **AMPLIFIER ASSEMBLY** |
| 13580 | Capacitor—1800 mmfd. (C2) |
| 5107 | Capacitor—.0025 mfd. (C7) |
| 30303 | Capacitor—.0035 mfd. (C6) |
| 4937 | Capacitor—.01 mfd. (C8) |
| 4870 | Capacitor—.025 mfd. (C1, C3, C11) |
| 33214 | Capacitor—Electrolytic, 2 sections 15 mfd. and 2 sections 20 mfd. (C4, C5, C9, C10) |
| 33212 | Control—Tone control switch (S3) |
| 30868 | Plug—2-contact female motor cable plug |
| 12493 | Plug—5-contact female speaker cable plug |
| 31388 | Resistor—390 ohms, 1 watt (R5) |
| 12312 | Resistor—3300 ohms, ½ watt (R4) |
| 14559 | Resistor—10,000 ohms, ½ watt (R2, R8) |
| 12738 | Resistor—27,000 ohms, ½ watt (R1) |
| 12264 | Resistor—220,000 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 14278 | Socket—Pickup input socket |
| 32537 | Socket—Tube socket |
| 14796 | Transformer—Power transformer 105-125 volts, 50-60 cycle (T1) |
| 33215 | Volume control and power switch (R3, S1) |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33216 | Arm—Pickup arm—less crystal, needle screw, and cable |
| 33218 | Base—Pickup arm mounting base and pivot shaft |
| 33217 | Crystal—Pickup crystal cartridge and needle screw |
| 33114 | Damper—Viscoloid damper for pickup armature |
| 31160 | Screw—Pickup needle screw |
| | **MOTOR ASSEMBLIES** |
| 32650 | Field—Motor field coils and laminations, 110 volts, 50 cycle (84569—8) |
| 32336 | Field—Motor field coils and laminations, 110 volts, 60 cycle (84569—7) |
| 33220 | Motor—105-125 volts, 50 cycles—less mounting plate (M1) |
| 33219 | Motor—105-125 volts, 60 cycles—less mounting plate (M1) |
| 33361 | Shaft—Turntable spindle shaft and gear—50 cycle |
| 33360 | Shaft—Turntable spindle shaft and gear—60 cycle |
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 33221 | Cam—Cam assembly comprising main and auxiliary cams, hub, and set screws |
| 32864 | Lever—Actuating lever with roller and mercury tube clip |
| 14195 | Screw—No. 10-32 x 5/16 cone pointed set screw for cam hub |
| 32869 | Screw—No. 10-32 x 5/16 set screw for cam hub |
| 32868 | Spring—Actuating lever tension spring |
| 32867 | Spring—Cam tension spring |
| 32865 | Support—Switch support and terminal board |
| 32866 | Switch—Mercury tube with leads (S2) |
| 31608 | Washer—"C" washer for actuating lever shaft |
| | **SPEAKER ASSEMBLIES (84604—1)** |
| 33406 | Cone—Speaker cone and voice coil (L1) |
| 5118 | Plug—3-contact male for speaker |
| 33222 | Speaker complete |
| 33407 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 11865 | Cup—Needle cup |
| 31464 | Damper—Damper plate and rubber sleeve for spindle |
| 11771 | Foot—Cabinet foot |
| 32633 | Handle—Carrying handle |
| 13085 | Hinge—Cabinet lid hinge |
| 31355 | Knob—Volume control or tone control knob |
| 33223 | Mounting—Complete set motor mounting screws, washers, and spacers |
| 31054 | Mounting—Pickup arm mounting cushion, washer, and nut |
| 30870 | Plug—2-contact male for motor leads |
| 31048 | Plug—2-contact male plug for phono. cable |
| 33364 | Support—Cabinet lid support (LH) |
| 33673 | Support—Pickup arm support |
| 33404 | Turntable |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL R-60** |
| | **AMPLIFIER ASSEMBLIES RS-91B** |
| 5107 | Capacitor—.0025 mfd. (C7) |
| 30303 | Capacitor—.0035 mfd. (C6) |
| 33584 | Capacitor—.005 mfd. (C2) |
| 4858 | Capacitor—.01 mfd. (C8) |
| 4870 | Capacitor—.025 mfd. (C1, C3, C11) |
| 33214 | Capacitor—Electrolytic, comprising 2 sections 15 mfd. and 2 sections 20 mfd. |
| 33212 | Control—Tone control |
| 33215 | Control—Volume control and power switch |
| 30868 | Plug—2 contact female plug for motor leads |
| 5119 | Plug—3 contact female plug for speaker |
| 31388 | Resistor—390 ohms, 1 watt (R5) |
| 12312 | Resistor—3,300 ohms, ½ watt (R4) |
| 14559 | Resistor—10,000 ohms, ½ watt (R2, R8) |
| 12738 | Resistor—27,000 ohms, ½ watt (R1) |
| 12264 | Resistor—220,000 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 32537 | Socket—Tube socket |
| 14796 | Transformer—Power transformer, 110 volts, 60 cycles |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33591 | Arm—Pickup arm shell |
| 34299 | Arm—Pivot arm and shaft |
| 34758 | Bushing—Rubber and metal bushings for pickup pivot arm |
| 33122 | Crystal—Pickup unit crystal cartridge |
| 33123 | Damper—Viscoloid damper |
| 33529 | Screw—Needle screw |
| | **MOTOR ASSEMBLIES** |
| 35248 | Arm—Turntable drive wheel arm and stud |
| 34276 | Coil—Field coil complete |
| 34280 | Clip—Spring clip for turntable shaft and drive wheel |
| 35247 | Mounting—1 set of motor plate mountings |
| 35246 | Plate—Motor plate with spindle bearing |
| 34277 | Pulley—Motor pulley and set screw |
| 34279 | Shaft—Turntable shaft and spring clip |
| 34281 | Spring—Drive wheel arm spring |
| 34278 | Wheel—Turntable drive wheel and spring clip |
| | **SPEAKER ASSEMBLIES (RL-79-2)** |
| 32907 | Cap—Speaker cone center dust cap |
| 32903 | Coil—Speaker field coil (L3) |
| 32906 | Coil—Speaker hum neutralizing coil (L2) |
| 35441 | Cone—Speaker cone and voice coil |
| 5118 | Plug—3-prong male for speaker |
| 32905 | Transformer—Output transformer (T2) |
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 32863 | Cam—Cam assembly comprising main and auxiliary cam, hub and set screws |
| 32864 | Lever—Actuating lever with roller and mercury switch clip |
| 31118 | Screw—No. 10-32 x 5/16 fillister cone pointed set screw |
| 32868 | Spring—Actuating lever tension spring |
| 32867 | Spring—Cam tension spring |
| 32865 | Support—Switch support and terminal board |
| 32866 | Switch—Mercury tube with leads (S2) |
| 31608 | Washer—"C" washer for holding actuating lever |
| | **MISCELLANEOUS ASSEMBLIES** |
| 4288 | Cap—Pickup lead cap |
| 4286 | Ferrule—Pickup lead ferrule and bushing |
| 31355 | Knob—Tone control or volume control knob |
| 34264 | Mounting—Motor mounting hardware |
| 30870 | Plug—2 contact male plug for motor leads |
| 32610 | Rest—Pickup rest |
| 14270 | Spring—Retaining spring for knob Stock No. 31355 |
| 34265 | Turntable—Complete |

# MODELS QU51C, QU51M and QU55

## Chassis No. RC-568 RC-568A

## Seven-Tube and Magic Eye, Five-Band, Radio-Phonographs

*QU51C*
*QU51M*

*QU55*

## Electrical and Mechanical Specifications

**FREQUENCY RANGES**

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540-1,720 kc (556-174 m) |
| Medium Wave ("B" Band) | 3.0-9.5 mc (100-31.6 m) |
| 31 Meter Spread Band | 9.5-11.7 mc (31.6-25.6 m) |
| 25 Meter Spread Band | 11.7-15.1 mc (25.6-19.9 m) |
| 19-13 Meter Spread Band | 15.1-22.5 mc (19.9-13.3 m) |

**INTERMEDIATE FREQUENCY** ..... 455 kc

**TUBE COMPLEMENT**

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6U5 | Tuning Indicator |
| (5) RCA-6SQ7 | 2nd Det. A-F Amplifier AVC |
| (6) RCA-6AD7G | Phase Inverter and Power Output |
| (7) RCA-6F6G | Power Output |
| (8) RCA-5U4G* (in QU51C and M) | Rectifier |
| (8) RCA-5T4 (in QU55) | Rectifier |

**PILOT LAMPS** ..... 2—Type 44, 6.3 volts, 0.25 amps.

**POWER SUPPLY RATINGS**

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 115 watts* |
| 105-125 volts, 25-60 cycles | 115 watts* |
| 100-130, 140-160, 200-250 volts, 50-60 cycles | 115 watts* |

* Including phono motor.

**POWER OUTPUT**

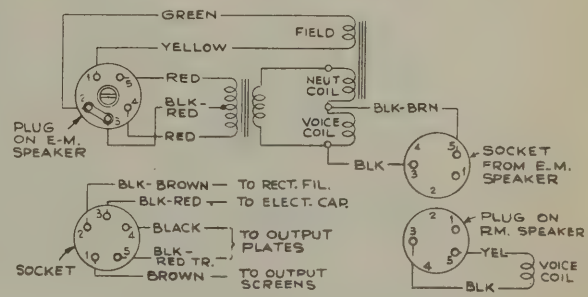
| | QU51 | QU55 |
|---|---|---|
| Undistorted | 9.5 watts | 12 watts |
| Maximum | 11 watts | 15 watts |

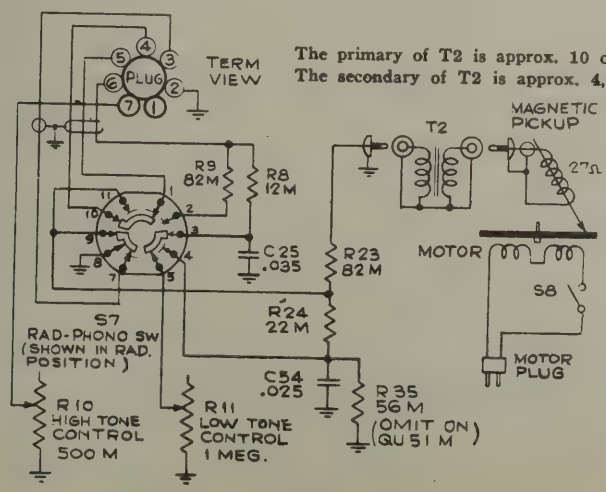
**LOUDSPEAKERS**

| | RL70N1 | RL70N3 | RL71A4 |
|---|---|---|---|
| Type | 12-in EM | 12-in. EM | 12-in. PM |
| Used in | QU51 | QU55 | QU51 & QU55 |
| V.C. Impedance at 400 cycles | 2.2 ohms at 400 cycles. | | |

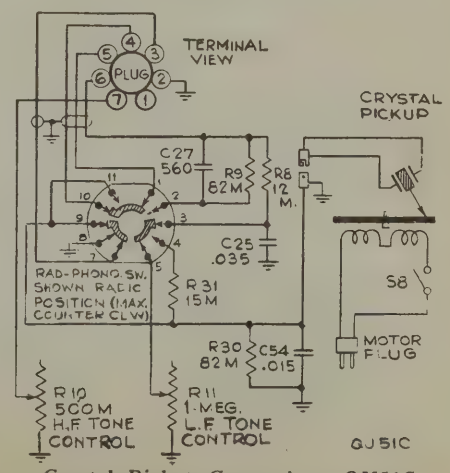
**PHONOGRAPHS**

| | |
|---|---|
| Type RP145E | Used in QU51C |
| Type RP152R | Used in QU51M and QU55 |
| Record Capacity | Eight 10-inch or seven 12-inch |
| Turntable Speed | 78 r.p.m. |
| Pickup Type | Crystal in RP145E, magnetic in RP152R |
| Crystal Pickup Impedance | 100,000 ohms at 1,000 cycles |
| Magnetic Pickup Impedance | 96 ohms at 1,000 cycles |
| Motor | Self starting, constant speed, induction type |




MAGNETIC PICKUP CONNECTIONS (QU51M AND QU55)




*Crystal Pickup Connections, QU51C*

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

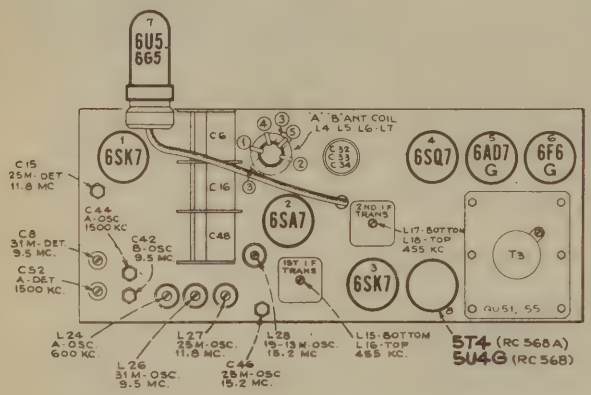
As the first step in r-f alignment, check the position of the drum. With the gang condenser plates fully meshed the drum of the RC568 or RC568A should be in the position shown in the dial drive cord diagram for that chassis. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

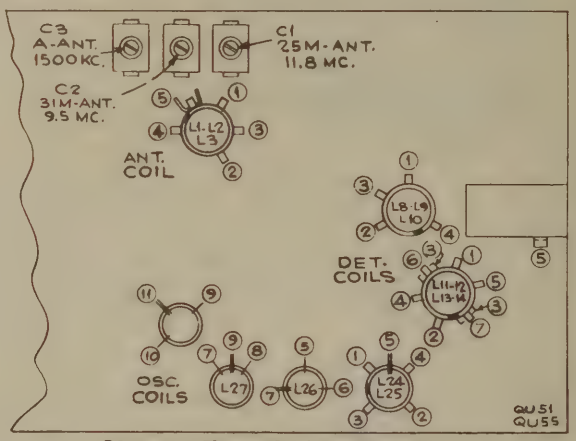
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."



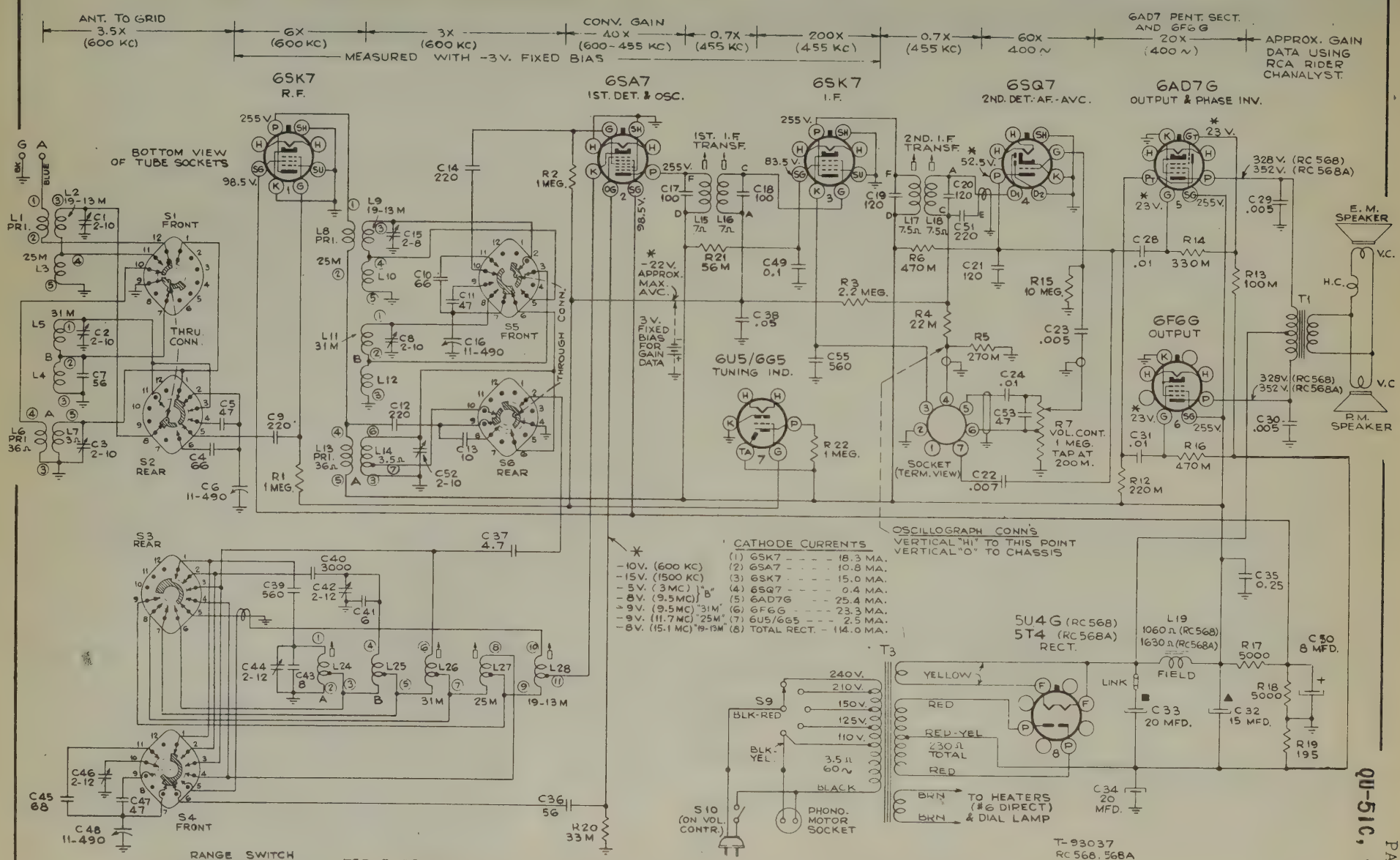

COIL AND TRIMMER LOCATIONS (BOTTOM VIEW)

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range Switch | Turn Radio Dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" band | Quiet point 600 kc end of dial | L18-L17 2nd I-F transformer |
| 2 | 6SA7 1st det. grid in series with .01 mfd. | | | | L16-L15 1st I-F transformer |
| 3 | Antenna terminal in series with 300 ohms | 11.8 mc | 25 meter band | 11.8 mc (138.5°) | L27 (osc.)** C1 (ant.) C15 (det.)*** |
| 4 | | 15.2 mc | | 15.2 mc (18.5°) | C46 (osc.)*† |
| 5 | Repeat steps 3 and 4 until aligned. | | | | |
| 6 | Antenna terminal in series with 300 ohms | 15.2 mc | 19-13 meter band | 15.2 mc (156°) | L28 (osc.)** |
| 7 | | 9.5 mc | 31 meter band | 9.5 mc (156°) | L26 (osc.)** C2 (ant.) C8 (det.)*** |
| 8 | | 9.5 mc | "B" band | 9.5 mc (11.5°) | C42 (osc.)* |
| 9 | Antenna terminal in series with 200 mmfd. | 1,500 kc | "A" band | 1,500 kc (27°) | C44 (osc.) C3 (ant.) C52 (det.) |
| 10 | | 600 kc | | 600 kc (149.5°) | L24 (osc.) Rock in |
| 11 | Repeat steps 9 and 10. | | | | |

† Check image to determine that C15 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

* Use minimum capacity peak if two can be obtained.
** Peak at minimum plunger position if two peaks can be obtained.
*** Use maximum capacity peak if two peaks can be obtained.

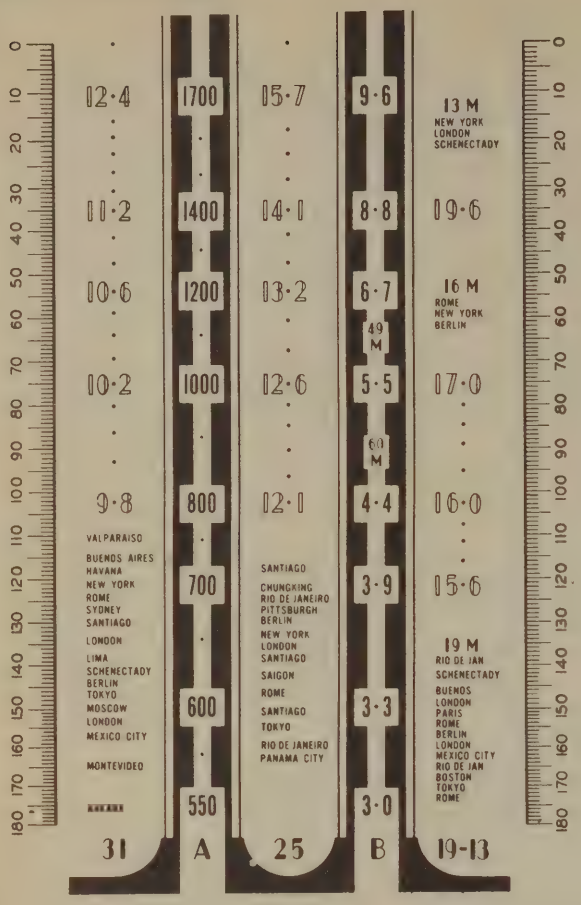
**NOTE:** Oscillator tracks above signals on all bands.




FOR INFORMATION ON AUTOMATIC RECORD CHANGER
REFER TO

RP-145E for MODEL QU-51C
RP-152R for MODELS QU-51M and QU-55

# QU-51C, -M, QU55




**Precautionary Lead Dress:**

(1) Dress all spread band oscillator coil leads to clear each other by ¼-inch.

(2) Dress toothpick condensers and switch leads away from and edge on to shield plates.

(3) Dress 2nd I.F. transformer lead to diode close to chassis and twist ground lead about it.

(4) Dress high side and tap condensers on vol. control close to chassis.

(5) Dress leads to converter socket so that they do not impair flexible mounting.

(6) Dress oscillator grid condenser and R.F. grid condenser well apart.

(7) Dress AVC resistor to R.F. converter grid close to lug on socket.

(8) Dress twisted AC wiring to power switch away from volume control wiring.

(9) Dress excess power trans. leads between trans. bell and back apron.

(10) Dress C23 away from front apron.

(11) Brown lead on 19-25M ant. coil must be dressed over top of coil.

(12) Dress C24 cap. with short lead to terminal board on rear apron. Power cord leads must be kept away from this section.

**Phasing Loudspeakers**

The two loudspeakers used in Models QU51 and QU55 have their voice coils connected in parallel and must be phased so that both cones will move in the same direction at the same time. If the phasing is incorrect a decided reduction in bass response will be produced. A very simple test for phasing can be made as follows:

1. Turn the instrument on and reduce the volume control setting until no signal is heard.
2. Momentarily connect the leads from a battery (4 to 6 volts) across the voice coils and note whether or not both cones move in the same direction. If they do the phasing is correct.
3. If the cones move in opposite directions the phasing is incorrect and the two voice coil leads going to the RL71A4 (P.M.) speaker should be reversed.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES QU51 RC568** |
| 37053 | Board—"Antenna-Ground" board |
| 37994 | Bracket—Pulley bracket assembly (long bracket) |
| 37995 | Bracket—Pulley bracket assembly (short bracket) |
| 35642 | Calibrator—Drive drum calibrator |
| 32187 | Capacitor—Electrolytic, 8 mfd., 150 volts |
| 34185 | Capacitor—Electrolytic, comprising one section of 20 mfd., 450 volts, one section of 15 mfd., 450 volts, and one section of 20 mfd., 25 volts |
| 12714 | Capacitor—Air trimmer—medium 2-12 mmfd. |
| 37996 | Capacitor—Mica trimmer, comprising 2 sections of 2.5-10 mmfd. each |
| 37059 | Capacitor—Mica trimmer, comprising 3 sections of 2.5-10 mmfd. each |
| 33097 | Capacitor—4.7 mmfd., ceramic |
| 35646 | Capacitor—6 mmfd., silvered mica |
| 13200 | Capacitor—10 mmfd. |
| 12722 | Capacitor—18 mmfd. |
| 35644 | Capacitor—47 mmfd., ceramic |
| 13141 | Capacitor—47 mmfd., moulded |
| 12723 | Capacitor—56 mmfd. |
| 36072 | Capacitor—66 mmfd. |
| 35645 | Capacitor—68 mmfd., ceramic |
| 30904 | Capacitor—100 mmfd. |
| 12724 | Capacitor—120 mmfd., moulded |
| 31813 | Capacitor—120 mmfd., unmoulded |
| 12894 | Capacitor—220 mmfd., moulded |
| 36616 | Capacitor—220 mmfd., unmoulded |
| 12537 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3000 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—.25 mfd. |
| 37055 | Coil—Antenna coil—"A", "B" and 31 meter bands |
| 37056 | Coil—Antenna coil—25 meter and 19-13 meter bands |
| 37093 | Coil—Oscillator coil—"A," "B," "C" band |
| 35624 | Coil—Oscillator coil—19-13 meter band |
| 35625 | Coil—Oscillator coil—25 meter band |
| 35626 | Coil—Oscillator coil—31 meter band |
| 37057 | Coil—R.F. coil—"A," "B" and 31 meter bands |
| 37058 | Coil—R.F. coil—25 meter and 19-13 meter bands |
| 37151 | Condenser—3 gang variable tuning condenser |
| 37992 | Control—Volume control and power switch |
| 32634 | Cord—Condenser drive cord (approx. 60-in. overall length) |
| 32634 | Cord—Pointer drive cord (approx. 60-in. overall length) |
| 31259 | Core—Adjustable core and stud assembly for 25 meter, 31 meter, and 19-13 meter bands oscillator coils |
| 35788 | Core—Adjustable core and stud for ABC band oscillator coil |
| 35768 | Drum—Drive drum—less calibrator |
| 38842 | Flywheel—Flywheel and tuning knob shaft |
| 30868 | Plug—2 contact female plug for motor cable |
| 12493 | Plug—5 contact female plug for speaker cable |
| 35641 | Pulley—Drive cord pulley |
| 34189 | Resistor—Voltage divider comprising one section of 5000 ohms, 6 watt, one section of 5000 ohms, 2½ watt, and one section of 195 ohms, 3 watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30652 | Resistor—1 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drum |
| 36107 | Socket—7 contact socket located on rear apron of chassis |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 34864 | Socket—Tuning tube socket |

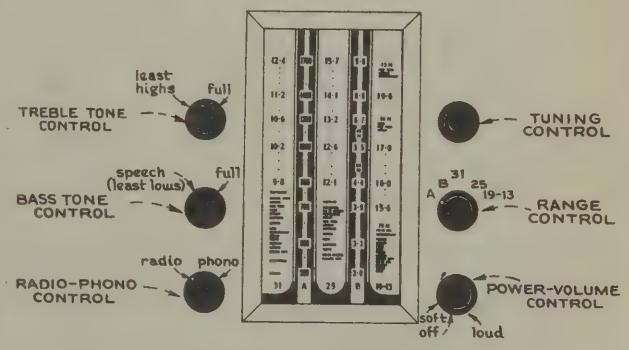
# Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31418 | Spring—Drive cord spring |
| 31261 | Spring—Retaining spring for oscillator coils core and stud assemblies |
| 37993 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer |
| 36615 | Transformer—Second I.F. transformer |
| 34183 | Transformer—Power transformer—110-125-150-210-240 volts, 50-60 cycle |
| 2917 | Washer—"C" washer for tuning shaft |
| | **CHASSIS ASSEMBLIES QU55, RC568A** (Same as QU51, RC568 except the following) |
| | DELETE |
| 37053 | Board—"Antenna-Ground" board |
| 37994 | Bracket—Pulley bracket assembly (long bracket) |
| 37993 | Switch—Range switch |
| | ADD |
| 31373 | Pulley—Drive cord pulley (¾-in. dia.) |
| 38307 | Pulley—Pulley (¾-in. dia.) and bracket assembly |
| 38308 | Switch—Range switch |
| | **SPEAKER ASSEMBLIES (RL70N1)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil, 1060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 31539 | Plug—5 prong male plug |
| 36146 | Suspension—Metal cone suspension |
| 37997 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (RL70N3)** |
| 13867 | Cap—Dust cap |
| 36331 | Coil—Field coil, 1630 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5119 | Plug—3-contact female plug for speaker cable |
| 31539 | Plug—5 prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| 37997 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (RL71A4)** |
| 13867 | Cap—Dust cap |
| 36145 | Cone—Cone complete with voice coil |
| 5118 | Plug—3 prong male plug |
| 36146 | Suspension—Metal cone suspension |
| | **MISCELLANEOUS ASSEMBLIES QU51** |
| 36461 | Button—Plug button |
| 12537 | Capacitor—560 mmfd., for QU51C only |
| 11315 | Capacitor—.015 mfd., for QU51C only |
| 4870 | Capacitor—.025 mfd. |
| 30716 | Clip—Tuning tube clip |
| 36109 | Control—Bass tone control |
| 35629 | Control—Treble tone control |
| 36328 | Cover—Compartment leads cover |
| 33680 | Cup—Used needle cup |
| 36155 | Decal—Bass tone control decal |
| 35387 | Decal—Power—volume decal |
| 36074 | Decal—Radio—Phono switch decal |
| 37839 | Decal—Range switch decal |
| 36386 | Decal—Trade mark decal (His Master's Voice) |
| 35392 | Decal—Trade mark decal (RCA Victrola) |
| 36156 | Decal—Treble tone control decal |
| 35391 | Decal—Tuning decal |
| 38225 | Dial—Glass dial scale |
| 38303 | Hinge—Cabinet door hinge |
| 30698 | Hinge—Cabinet lid hinge |

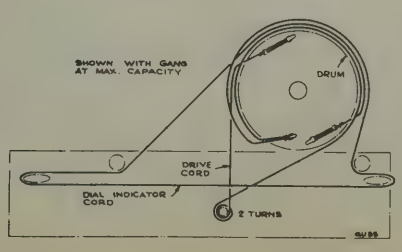
| STOCK No. | DESCRIPTION |
|---|---|
| 36593 | Indicator—Station selector indicator |
| 13103 | Jewel—Pilot lamp jewel |
| 35814 | Knob—Range switch or radio-phono switch knob |
| 35775 | Knob—Tuning, volume control, treble or bass control knob |
| 11891 | Lamp—Dial lamp |
| 33774 | Mounting—Complete set of mounting hardware to mount one speaker |
| 31470 | Mounting—Motorboard spring mounting |
| 37998 | Plate—Dial plate complete—less dial, pointer, and tube clip |
| 36395 | Plug—7-prong male plug for radio-phono cable |
| 31048 | Plug—Phono input cable plug for QU51M |
| 38302 | Pull—Door pull and screw |
| 36246 | Receptacle—Packaged needle holder |
| 30128 | Resistor—12,000 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 37800 | Shade—Lamp shade |
| 33083 | Spring—Cabinet lid support spring |
| 30900 | Spring—Retaining spring for knobs |
| 35831 | Support—Cabinet lid support |
| 38301 | Switch—radio-phono switch |
| 14609 | Transformer—Input transformer for QU51M |
| | **MISCELLANEOUS ASSEMBLIES QU55** (Same as QU51 except the following) |
| | DELETE |
| 38303 | Hinge—Cabinet door hinge |
| 30698 | Hinge—Cabinet lid hinge |
| 37998 | Plate—Dial plate complete—less pointer and tube clip |
| 38302 | Pull—Door pull and screw |
| 33083 | Spring—Cabinet lid support spring |
| 35831 | Support—Cabinet lid support |
| | ADD |
| 38704 | Back—Cabinet back |
| 38310 | Board—"Antenna-Ground" |
| 38382 | Hinge—Cabinet lid hinge L.H. |
| 38381 | Hinge—Cabinet lid hinge R.H. |
| 38309 | Plate—Dial plate complete—less pointer and tube clip |
| 36413 | Pull—Door pull |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 35575 | Spring—Cabinet lid support spring |
| 36414 | Support—Cabinet lid support L.H. |
| 36693 | Support—Cabinet lid support R.H. |

FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON

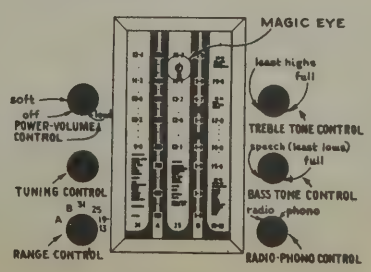
RP-145E for MODEL QU-51C
RP-152R for MODELS QU-51M and QU-55



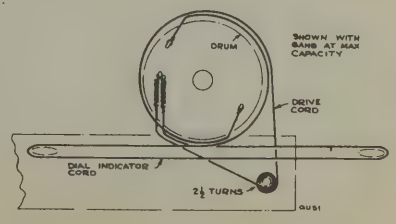

*QU51C and QU51M*




*QU55*




*QU55*




*QU51*

# MODELS QU52C and QU52M

**Chassis No. RC-507L RC-507N**

## Six-Tube, Five-Band, A-C, Superheterodyne Radio-Phonograph Combinations

### Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" band) | 540-1,720 kc (556-174 m) |
| Medium Wave ("B" band) | 3.0-9.5 mc (100-31.6 m) |
| "31" Meter Spread Band | 9.5-11.7 mc (31.6-25.6 m) |
| "25" Meter Spread Band | 11.7-15.1 mc (25.6-19.9 m) |
| "19-13" Meter Spread Band | 15.1-22.5 mc (19.9-13.3 m) |

INTERMEDIATE FREQUENCY ..... 455 kc

POWER SUPPLY RATING

| | |
|---|---|
| 105-125, 200-250 volts, 50-60 cycles | 80 watts total |
| 105-125 volts, 25 cycles | 80 watts total |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SA7 | 1st Detector-Oscillator |
| (2) RCA-6SK7 | I-F Amplifier |
| (3) RCA-6SQ7 | 2nd Detector, A-F Amplifier, A.V.C. |
| (4) RCA-6AD7-G | Phase-Inverter, Power Output |
| (5) RCA-6F6-G | Power Output |
| (6) RCA-5Y3-G | Rectifier |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 3 watts |
| Maximum | 3.5 watts |

PHONOGRAPH (Automatic)

CRYSTAL PICKUP (QU52C)

| | |
|---|---|
| Impedance | 100,000 ohms at 1,000 c.p.s. |
| Average Output | 1.5 volts at 1,000 c.p.s. across 500,000 ohm load |

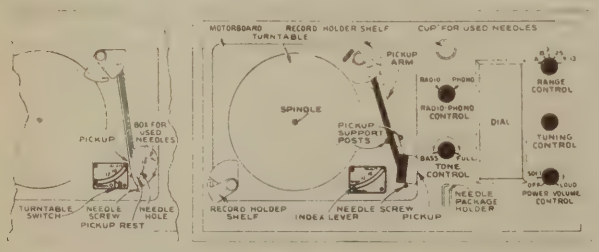
MAGNETIC PICKUP (QU52M)

| | |
|---|---|
| Impedance | 96 ohms at 1,000 c.p.s. |
| Average Output | 0.14 volts at 400 c.p.s. across open circuit |

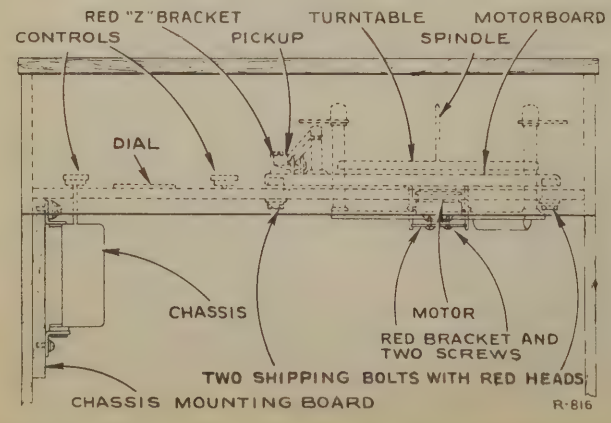
LOUDSPEAKER (RL-70M1)

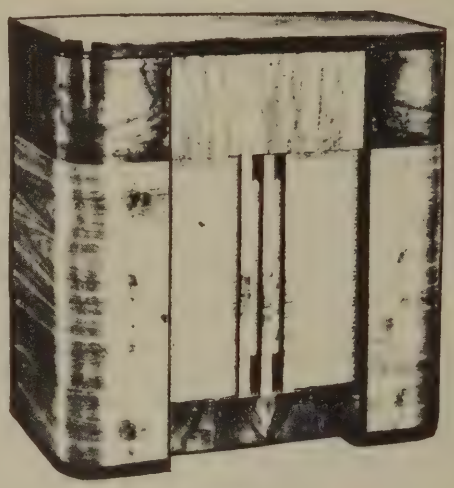
| | |
|---|---|
| Type | 12-inch Electrodynamic |
| V-C Impedance at 400 c.p.s. | 2.2 ohms |

| | Height | Width | Depth |
|---|---|---|---|
| CABINET DIMENSIONS (inches) | 32 | 29⅜ | 17⅛ |
| Chassis Base Dimensions (inches) | 2¾ | 15¼ | 5½ |
| Overall Chassis Height | 7⅜ inches | | |
| Weight (net) | 71 pounds | | |
| Tuning Drive Ratio | 25 to 1 | | |




*QU52C* *QU52M*

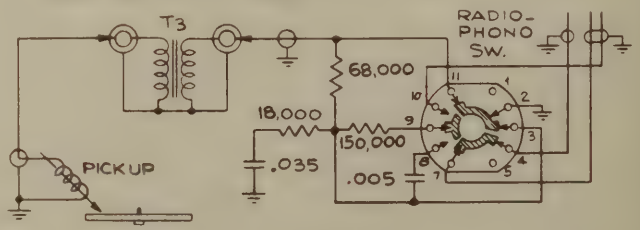


### Phonograph Information

#### For information on Automatic Mechanism refer to Service Notes for RP152

The QU52M is equipped with a magnetic pickup, the QU52C with a crystal pickup. The output of the crystal pickup is fed into the audio end of the receiver through a switch and compensating circuit. On instruments using a magnetic pickup, a transformer and compensating circuit are used between the pickup and the audio input (see schematic diagram). The transformer has two jacks, the larger one (primary) for input from the pickup and the smaller one (secondary) for output to the compensating circuit. The components of the compensating circuit are mounted externally to the chassis on a terminal board in the cabinet.




*Schematic Showing Magnetic Pickup Connections (QU52M)*

**Caution.—**

1. This instrument is not recommended for playing 10-inch and 12-inch records in **mixed sequence.**

2. **Never use force** to start or stop the motor or any part of the record-changing mechanism or pickup arm.

3. **Warped or damaged records** may cause the mechanism to jam.

4. **Warped records** may slide on one another when playing, resulting in unsatisfactory reproduction.

5. **Do not leave records on the record-holder posts** as they may warp, particularly in warm climates. Warped records may be flattened by placing them on a flat surface with a flat heavy article placed on top of them for a few days.

6. **Do not leave pickup needle resting** on a record or on the turntable. Always place it on the pickup rest.

7. **Do not insert a used needle in the pickup,** and avoid turning a needle after it has been used.

8. If for any reason the phonograph stalls, turn off the turntable switch and remove the records from the record holder shelves. Start the turntable and allow the pickup arm to complete its cycle.

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "180°" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.** — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."

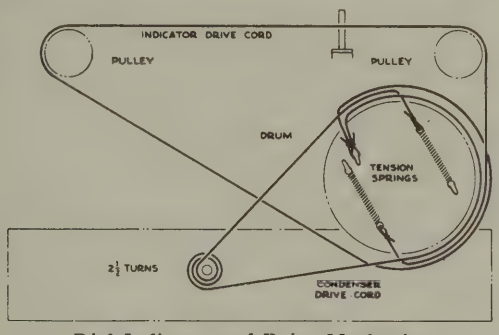
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Range switch | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | A | Quiet Point near 180° | L3 and L4 2nd I-F Trans. |
| 2 | 6SA7 1st Det. grid in series with .01 mfd. | | | | L1 and L2 1st I-F Trans. |
| 3 | Ant. lead in series with 300 ohms | 11.8 mc | 25M | 138.5° | L5 (osc.) C1 (ant.) |
| 4 | | 15.2 mc | | 17° | C2 (osc.)* |
| 5 | | Repeat steps 3 and 4 | | | |
| 6 | | 15.2 mc | 19-13M | 156° | L6 (osc.)** |
| 7 | | 9.5 mc | 31M | 156° | L7 (osc.)** C3 (ant.) |
| 8 | | 9.5 mc | B | 11.5° | C4 (osc.)*** |
| 9 | Ant. lead in series with 200 mmf. | 1,500 kc | A | 26° | C5 (osc.) C6 (ant.) |
| 10 | | 600 kc | | 150° | L8 (osc.) (Rock gang) |
| 11 | | Repeat steps 9 and 10 | | | |

* Use minimum capacity peak if two can be obtained. Check image to determine that C2 has been adjusted to the correct peak by tuning receiver to approximately 14.29 mc (29°) where a weaker signal should be received.

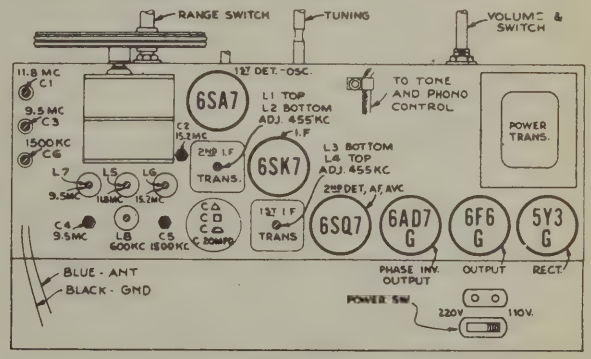
**Peak at minimum position of plunger if two peaks can be obtained.

***Peak at minimum capacity if two peaks can be obtained.

NOTE: Oscillator tracks above signal on all bands.



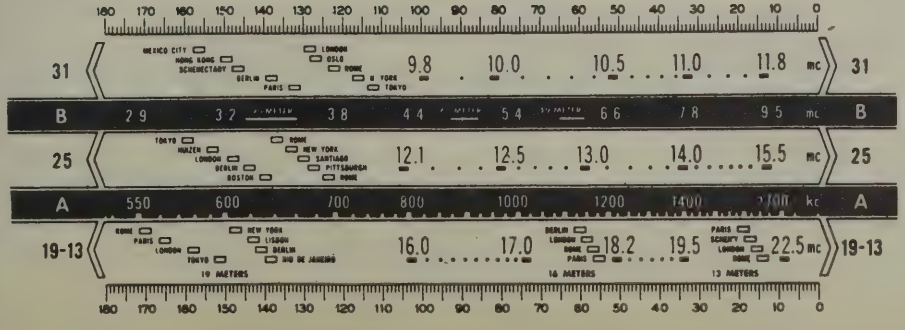

*Dial-Indicator and Drive Mechanism*




*Tube and Trimmer Location*

**Precautionary Lead Dress.—**

1. All leads between antenna coils and switch must be as short as possible and kept away from oscillator coil, leads and switches.
2. All oscillator coil leads must be kept apart from each other and other leads and parts.
3. Blue plate lead of 2nd I-F should be dressed under other leads and against chassis.

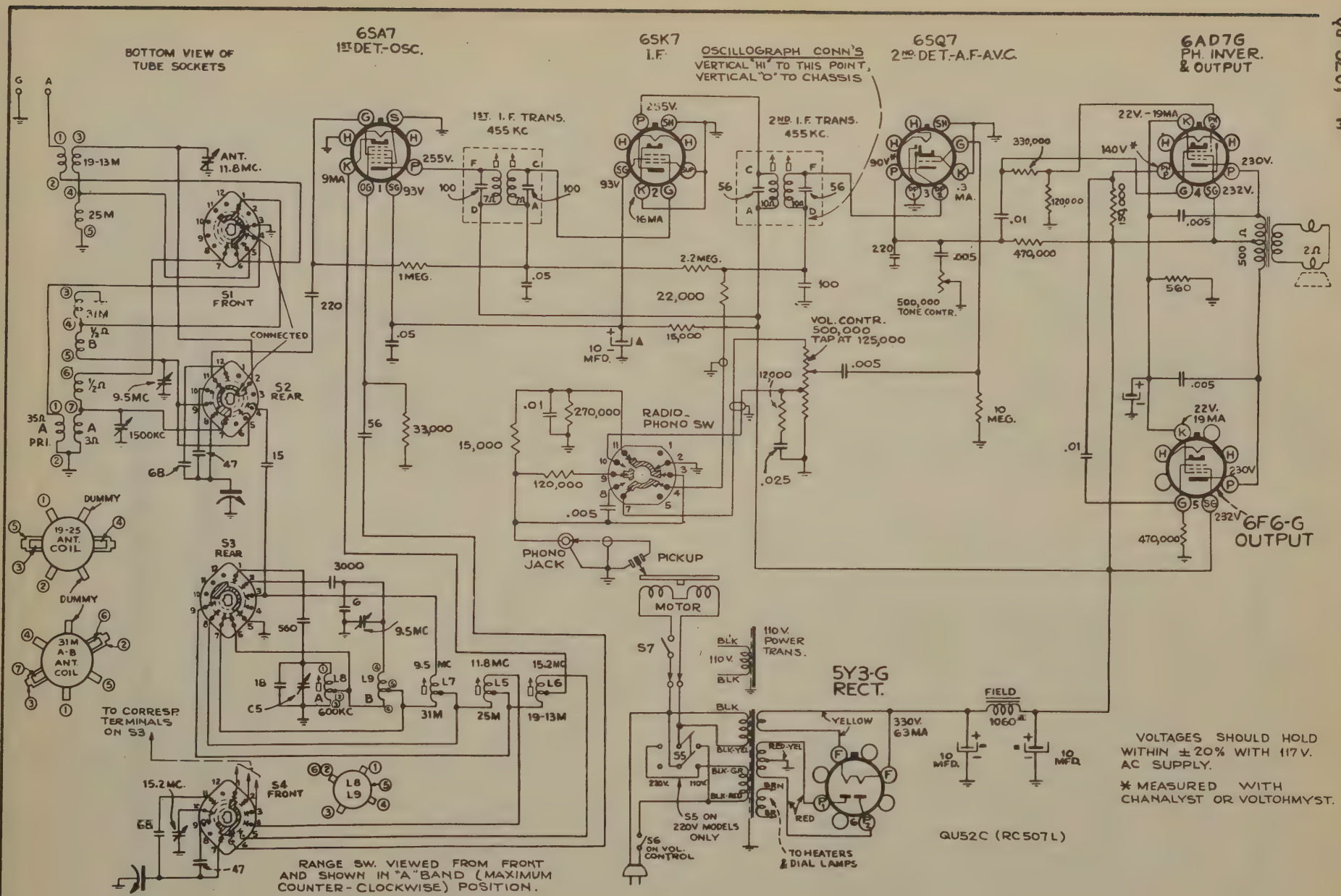



*On actual Dial Scale the markings and calibration are rotated 90°*

## Calibration Scale

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example: 150° on the calibration scale corresponds to approximately 600 kc on "A" band, etc. Read instructions under "Alignment Procedure."




*The Magnetic Pickup Connections for QU52M are shown in a Separate Drawing.*

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

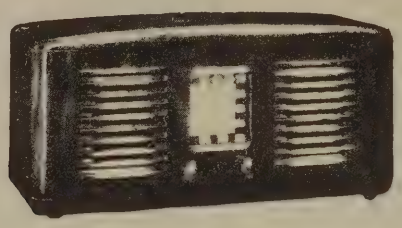
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | (RC 507L) For Crystal Type Pickup |
| | (RC 507N) For Magnetic Type Pickup |
| 38923 | Bracket—L. H. pulley support bracket complete with pulley |
| 38924 | Bracket—R. H. pulley support bracket complete with pulley |
| 32556 | Cable—Phono input cable (for magnetic type) |
| 36398 | Cable—Shielded cable for radio-phono connector |
| 33014 | Capacitor—Electrolytic, comprising 3 sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts |
| 12714 | Capacitor—Air trimmer—medium—2-12 mmfd. |
| 34654 | Capacitor—Mica trimmer, comprising 3 sections of 2.5-10 mmfd. each |
| 35646 | Capacitor—6 mmfd., ceramic |
| 36012 | Capacitor—15 mmfd., ceramic |
| 12896 | Capacitor—15 mmfd., moulded mica |
| 35644 | Capacitor—47 mmfd., ceramic |
| 13141 | Capacitor—47 mmfd., moulded |
| 12723 | Capacitor—56 mmfd., moulded |
| 30949 | Capacitor—56 mmfd., unmoulded |
| 35645 | Capacitor—68 mmfd., ceramic |
| 13057 | Capacitor—68 mmfd., moulded |
| 12720 | Capacitor—100 mmfd., moulded |
| 30904 | Capacitor—100 mmfd., unmoulded |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 4838 | Capacitor—.005 mfd., 1,000 volts |
| 33584 | Capacitor—.005 mfd., 1,200 volts |
| 4937 | Capacitor—.01 mfd., 1,000 volts |
| 4870 | Capacitor—.025 mfd. |
| 5196 | Capacitor—.035 mfd. (for magnetic type) |
| 4886 | Capacitor—.05 mfd. |
| 35632 | Coil—Antenna coil—"A" band |
| 35631 | Coil—Antenna coil—spread band |
| 35623 | Coil—Oscillator coil—"A" and "B" bands |
| 35624 | Coil—Oscillator coil—19-13 meter band |
| 35625 | Coil—Oscillator coil—25 meter band |
| 35626 | Coil—Oscillator coil—31 meter band |
| 35619 | Condenser—Variable tuning condenser |
| 38409 | Control—Tone control |
| 38412 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 27 in. overall lgth.) |
| 32634 | Cord—Pointer cord (approx. 47 in. overall lgth.) |
| 35788 | Core—Adjustable core and stud for "A" and "B" band oscillator coil |
| 31259 | Core—Adjustable core and stud for "19-13 meter band," "25 meter band," and "31 meter band" oscillator coils |
| 35642 | Dial—Drive drum calibrator dial |
| 35627 | Drum—Drive drum—less calibrator dial |
| 35638 | Flywheel—Tuning shaft flywheel |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 35630 | Pulley—Drive cord pulley—between tuning knob and range switch shafts |
| 30735 | Resistor—560 ohms, 1 watt |
| 30436 | Resistor—12,000 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt (for crystal type only) |
| 35595 | Resistor—15,000 ohms, 3 watt |
| 3219 | Resistor—18,000 ohms, ½ watt (for magnetic type) |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 14138 | Resistor—68,000 ohms, ½ watt (for magnetic type only) |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30493 | Resistor—150,000 ohms, ½ watt |
| 14020 | Resistor—150,000 ohms, ½ watt (for magnetic type) |
| 30651 | Resistor—270,000 ohms, ½ watt (for crystal type only) |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 14350 | Screw—No. 8-32 sq. head set screw for drive drum |
| 38925 | Shaft—Flywheel and tuning knob shaft |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Pointer cord or drive cord spring |
| 31261 | Spring—Retaining spring for adjustable core and studs |
| 35622 | Support—Tuning knob shaft and flywheel support |
| 38927 | Switch—Phono switch |
| 38926 | Switch—Range switch |
| 32827 | Switch—Voltage switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer—105-120 volts, 25 cycle |
| 32911 | Transformer—Power transformer—105-120 volts, 50-60 cycle |
| 32852 | Transformer — Power transformer, 105-125/200-240 volts, 50-60 cycle |
| | **SPEAKER ASSEMBLIES** |
| | (RL 70M-1) |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male plug for speaker |
| 37899 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36461 | Button—Plug button |
| 36328 | Cover- -Compartment lamp lead cover |
| 33680 | Cup—Used needle cup |
| 36074 | Decalcomania—Radio-Phono switch decal |
| 37839 | Decalcomania—Range switch decal |
| 35388 | Decalcomania—Tone control decal |
| 36386 | Decalcomania—Trade mark decal. (His Master's Voice) |
| 35392 | Decalcomania—Trade mark decal. (RCA Victrola) |
| 35391 | Decalcomania—Tuning decal |
| 35387 | Decalcomania—Volume-power switch decal |
| 38982 | Dial—Glass dial scale |
| 30698 | Hinge—Cabinet lid hinge |
| 36039 | Indicator—Station selector indicator |
| 13103 | Jewel—Compartment lamp cap |
| 38334 | Knob—Range switch or phono switch knob |
| 37256 | Knob—Tuning, volume control or tone control knob |
| 11765 | Lamp—Dial lamp |
| 5117 | Lamp—Compartment lamp |
| 31470 | Mounting—Motorboard spring mounting hardware |
| 33774 | Mounting—Speaker mounting hardware |
| 36246 | Receptacle—Packaged needle receptacle |
| 37800 | Shade—Compartment lamp shade |
| 35575 | Spring—Lid support spring |
| 30900 | Spring—Retaining spring for knobs |
| 36414 | Support—Lid support |
| 14609 | Transformer—Input transformer (for magnetic type only) |

FOR RECORD CHANGER REPLACEMENT PARTS SEE
SERVICE NOTES ON
RP-152

# MODEL 55X

## Chassis No. RC-1003C

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver



## Specifications

FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency..... 455 kc

POWER SUPPLY RATINGS
105-125 volts, direct current, or 50-60 cycles..... 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)
Undistorted..... 0.8 watts Maximum..... 1.2 watts

LOUDSPEAKERS
RL-86-A3 5-inch "EM," 4-ohm voice coil
RL-81-B2 5-inch "PM," 4-ohm voice coil

**"PM" Speaker 92388-1:**

The cone and voice coil for this speaker is Stock No. 39572.

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil and turn the receiver volume control to maximum.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

**Test-Oscillator.**—For I-F alignment, connect the low side of the test-oscillator to the common negative through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

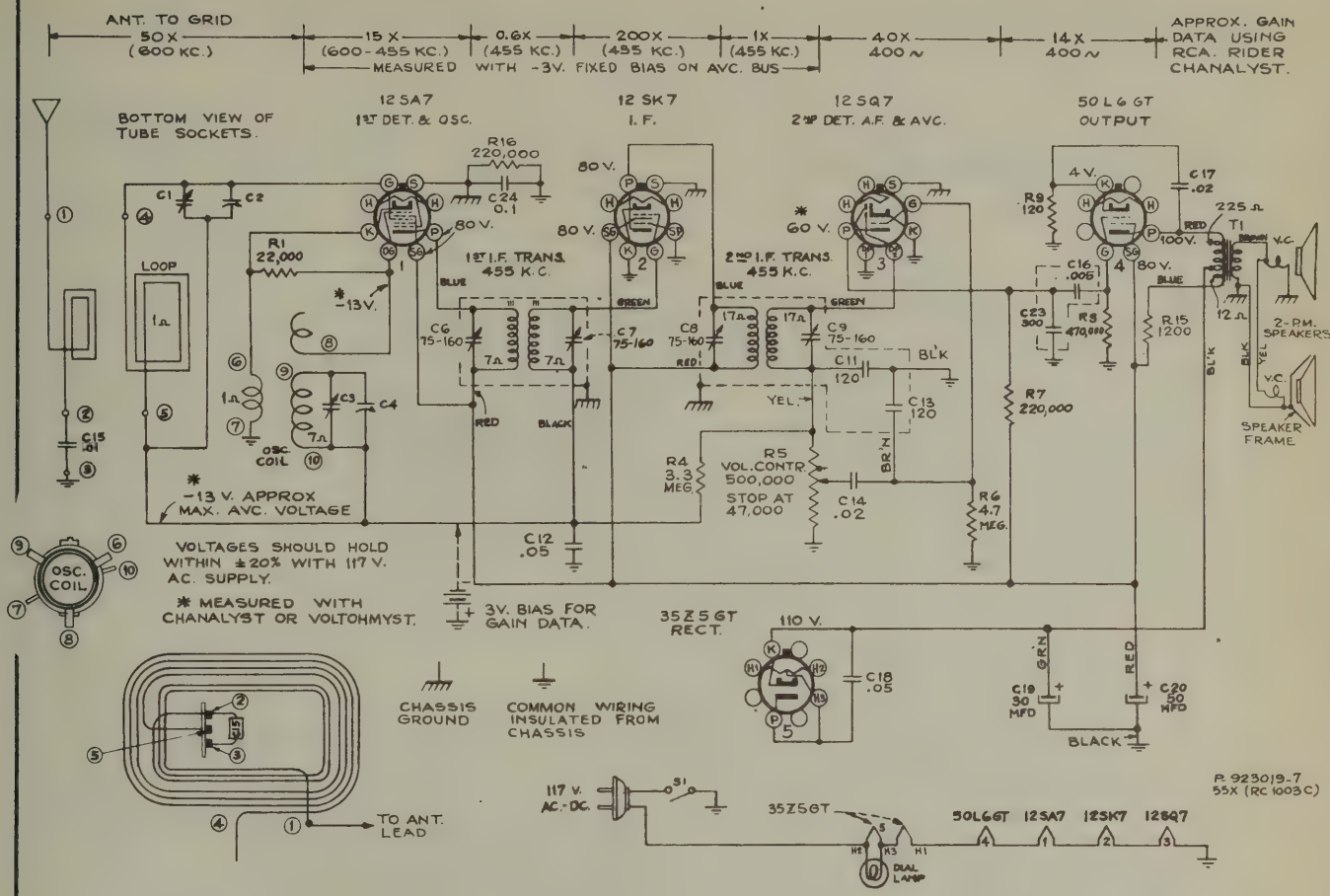
**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

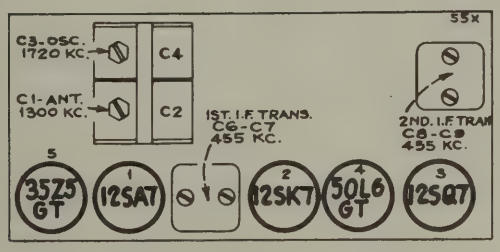
| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet point 1,600 kc end of dial | C8, C9 2nd I-F Transformer |
| 2 | 1st Det. grid in series with .01 mfd. | | | C6, C7 1st I-F Transformer |
| 3 | Ant. terminal in series with 100 mmfd. | 1,720 kc | Gang at minimum | C3 (osc.) |
| 4 | Radiated signal 1300 kc | | Signal Frequency | C1 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-1003C)** |
| 35097 | Can—Shield can for 1st I.F. transformer..... |
| 36301 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 150 volts, and 1 section of 50 mfd., 150 volts ..... |
| 37359 | Capacitor—Comprising 1 section of .005 mfd., and 1 section of .0003 mfd. ..... |
| 4937 | Capacitor—.01 mfd. ..... |
| 36248 | Capacitor—.02 mfd ..... |
| 32787 | Capacitor—.05 mfd. ..... |
| 43763 | Capacitor—0.1 mfd. ..... |
| 36801 | Coil—Oscillator coil ..... |
| 37911 | Condenser—Variable tuning condenser ..... |
| 35344 | Control—Volume control ..... |
| 32634 | Cord—Drive cord (approx. 18-in. overall length) |
| 37913 | Dial—Dial scale ..... |
| 37914 | Indicator—Station selector indicator ..... |
| 11765 | Lamp—Dial lamp ..... |
| 37915 | Loop—Antenna loop ..... |
| 35993 | Plate—Dial plate complete—less dial ..... |
| 30189 | Resistor—120 ohms, ½ watt ..... |
| 6134 | Resistor—1,200 ohms, 1 watt, for P.M. speaker |
| 13998 | Resistor—22,000 ohms, ½ watt ..... |
| 14583 | Resistor—220,000 ohms, ½ watt ..... |
| 30648 | Resistor—470,000 ohms, ½ watt ..... |
| 12928 | Resistor—3.3 meg., ½ watt ..... |
| 30271 | Resistor—4.7 meg., ½ watt ..... |
| 35343 | Shaft—Tuning knob shaft (1⅛-in. overall length) |
| 38846 | Shaft—Tuning knob shaft (1¼-in. overall length) |
| 34449 | Socket—Dial lamp socket ..... |
| 31251 | Socket—Tube socket ..... |
| 31418 | Spring—Drive cord spring ..... |
| 35098 | Spring—To hold I.F. transformer in shield can. |
| 36232 | Transformer—First I.F. transformer—less shield can ..... |
| 37364 | Transformer—Second I.F. transformer—less shield can ..... |
| 38851 | Transformer—Output transformer for P.M. speaker ..... |
| 33726 | Washer—"C" washer for shaft No. 38846 ..... |
| 34373 | Washer—"C" washer for tuning shaft No. 35343 |
| | **E. M. SPEAKER ASSEMBLIES (RL-86A-3)** |
| 35570 | Cone—Cone complete with voice coil ..... |
| | **P. M. SPEAKER ASSEMBLIES (RL-81B-2)** |
| 35570 | Cone—Cone complete with voice coil ..... |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38748 | Back—Cabinet back ..... |
| 35079 | Crystal—Dial scale crystal ..... |
| 37831 | Fastener—Push fastener for back..... |
| 30863 | Knob—Control knob ..... |
| 30900 | Spring—Retaining spring for knob ..... |

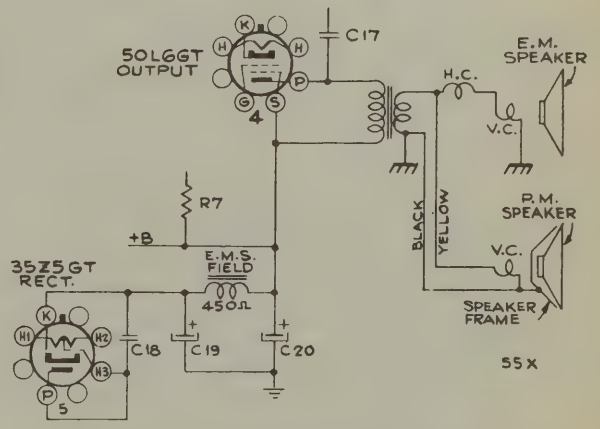



**Phasing Speakers in Model 55X.—**

For correct sound quality, it is ESSENTIAL that the cones of the two loudspeakers move in and out together.

To check the phasing, connect a 1½-volt dry cell across the secondary of the output transformer and observe, by sight or feel, whether the two cones move in the same direction. If one moves in while the other moves out, reverse the external connections to the voice coil of the permanent-magnet speaker.




*Above—Circuit of Model 55X Using one "PM" and one "EM" Speaker.*

# MODELS BP-55, BP-56, and BP-85

## Chassis No. RC-455

## Five-Tube, Single-Band, Battery or House Current Superheterodyne Receiver

### Electrical and Mechanical Specifications

Frequency Range ..... 540-1,600 kc
Intermediate Frequency ..... 455 kc

RCA TUBE COMPLEMENT

(1) RCA-1A7-GT ..... 1st.-Det.—Osc.
(2) RCA-1N5-GT ..... I-F Amplifier
(3) RCA-1H5-GT ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-1T5-GT ..... Output
(5) RCA-117Z6-G or 35Z5-GT ..... Rectifier

LINE CURRENT SUPPLY

110 to 125 volts, AC 50 or 60 cycles, or DC

BATTERIES REQUIRED

"A" one 6 volt dry plug-in type (Eveready No. 747 or equivalent)
"B" two 45 volt dry plug-in type (Eveready No. 482 or equivalent)

CURRENT CONSUMPTION

"A," 0.05 ampere—"B," 10.5 milliamperes full power;
6.0 milliamperes save power.

POWER OUTPUT

Undistorted ..... 0.125 watt
Maximum ..... 0.17 watt

LOUDSPEAKER

Type ..... 5-inch permanent-magnet dynamic
Voice-coil Impedance ..... 4.5 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) ..... | 10¾ | 13 | 5 |

Weight—(Net) less batteries ..... 8½ pounds
With batteries ..... 15½ pounds
Tuning Drive Ratio ..... 6 to 1

The following models comprise the BP-55 series. All contain the RC-455 chassis.

BP-55 Light Cloth
BP-56 Dark Cloth
BP-85 Leatherette

### Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION | STOCK No. | DESCRIPTION |
|---|---|---|---|
| | **CHASSIS ASSEMBLIES (RC-455)** | 34473 | Resistor—2,000 ohms, 10 watts (R12) |
| 13001 | Capacitor—8.2 mmfd. (C25) | 12312 | Resistor—3,300 ohms, ½ watt (R11) |
| 30949 | Capacitor—56 mmfd. (C8, C9, C11, C12) | 12412 | Resistor—47,000 ohms, ½ watt (R2) |
| 13057 | Capacitor—60 mmfd. (C6) | 12264 | Resistor—220,000 ohms ½ watt (R1) |
| 12720 | Capacitor—100 mmfd. (C13, C14, C24) | 13730 | Resistor—1 meg., ½ watt (R7) |
| 12635 | Capacitor—1,000 mmfd. (C16) | 12679 | Resistor—2.2 meg., ½ watt (R5, R8, R15) |
| 34459 | Capacitor—.0025 mfd. (C17) | 14661 | Resistor—6.8 meg., ½ watt (R3, R4, R6) |
| 33584 | Capacitor—.005 mfd. (C23) | 31319 | Socket—Tube socket |
| 4937 | Capacitor—.01 mfd. (C7, C15) | 34467 | Switch—Power selector switch (S1) |
| 32787 | Capacitor—.05 mfd. (C1, C10, C18) | 34466 | Transformer—First i-f transformer (L2, L3, C8, C9) |
| 4839 | Capacitor—0.1 mfd. (C22) | 34466 | Transformer—Second i-f transformer (L6, L7, C11, C12) |
| 34472 | Capacitor—Electrolytic comprising 2 sections of 20 mfd. each, and 1 of 200 mfd. (C19, C20, C21) | | **SPEAKER ASSEMBLIES (RL-85-1)** |
| 34965 | Capacitor—Electrolytic 20 mfd. (C26) | 32907 | Cap—Cone center dust cap |
| 34468 | Coil—Loop loading coil (L1) | 34554 | Cone—Speaker cone, voice coil, and center suspension (L8) |
| 34877 | Coil—Oscillator coil (L4, L5) | 34555 | Transformer—Output transformer (T1) |
| 34464 | Condenser—Variable tuning condenser (C2, C3, C4, C5) | | **MISCELLANEOUS ASSEMBLIES** |
| 34465 | Control—Volume control and power switch (R13, S2) | 34476 | Dial—Dial scale and mounting plate |
| 34469 | Indicator—"On-Off" indicator | 34611 | Handle—Carrying handle for Model BP-55 and BP-85 |
| 34471 | Indicator—Station selector indicator | 34612 | Handle—Carrying handle for Model BP-56 |
| 5133 | Pin—Pin on loop leads | 34015 | Knob—Tuning, volume control or voltage switch knob |
| 34470 | Plate—Power selector switch indicator plate | 31193 | Lead—Antenna lead—approximately 25 ft. long |
| 34689 | Plug—2-contact male plug for battery cable | 34556 | Loop—Complete loop and support |
| 32641 | Plug—3-contact male plug for battery cable | | |
| 12414 | Resistor—560 ohms, ½ watt (R14) | | |
| 30499 | Resistor—470 ohms, ½ watt (R10) | | |
| 14720 | Resistor—1,000 ohms, ½ watt (R9) | | |

**Resistance Power Cord:**

In Models BP-55, -56, -85 that use a 35Z5GT rectifier, the 545-ohm resistance power cord is Stock No. 35311.

**Distortion or Low Volume:**

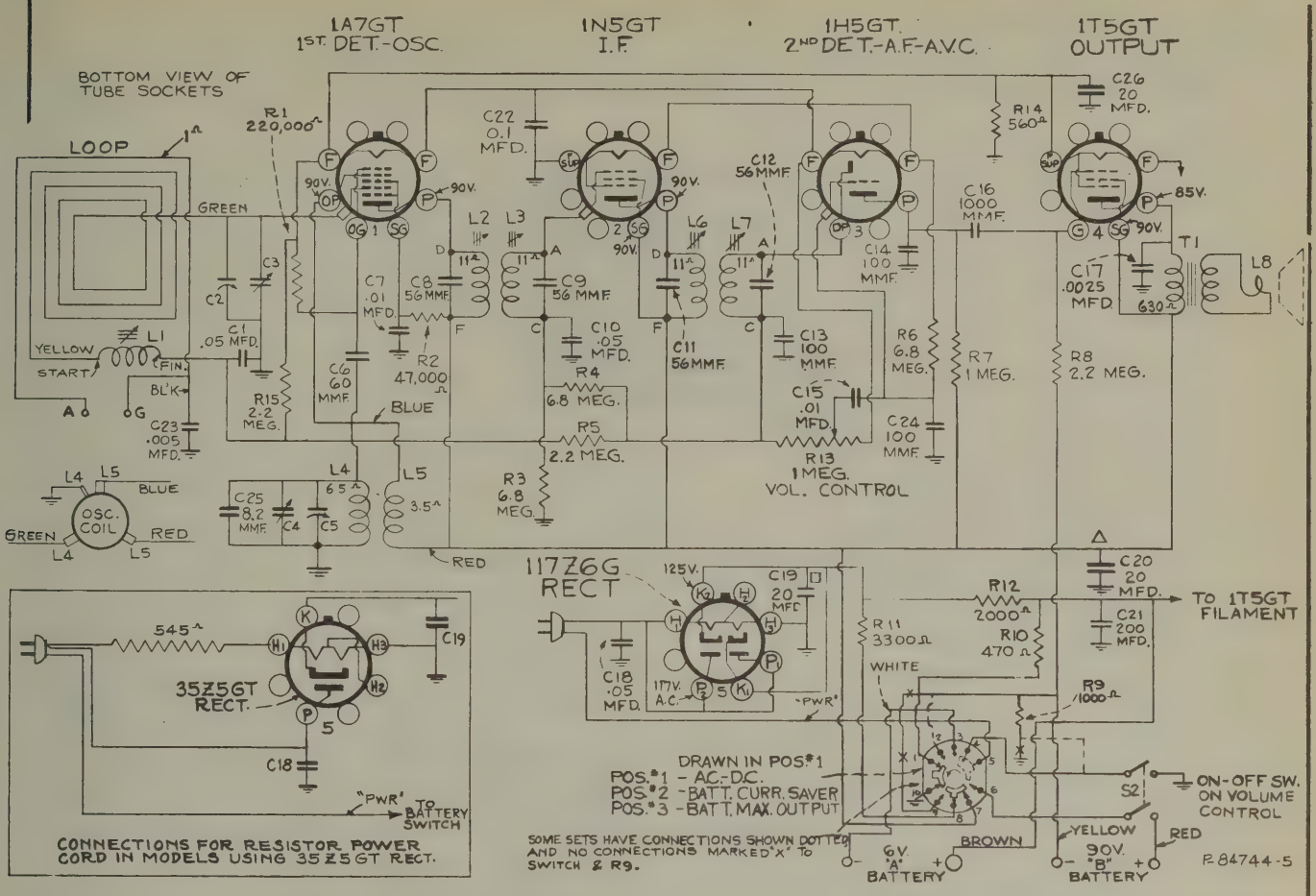
Distortion or low output on these models may be related to premature loss of emission of the 1T5GT output tube. This condition develops when the receiver is used on an AC or DC power supply, particularly where the line voltage is comparatively low. The 1T5GT now incorporates an over-sized filament that eliminates the trouble.

**Chassis and Speaker Mounting:**

Add Stock No.
35297 Mounting — Chassis and speaker mounting screw and cap

**Hum:**

Hum in Models BP-55, -56, -85 is generally due to an intermittent or open common connection between the electrolytic and chassis. Solder securely or add a jumper from the electrolytic ground lug to lance on chassis.




*Schematic Circuit Diagram*

Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately ± 20% with rated battery voltage.

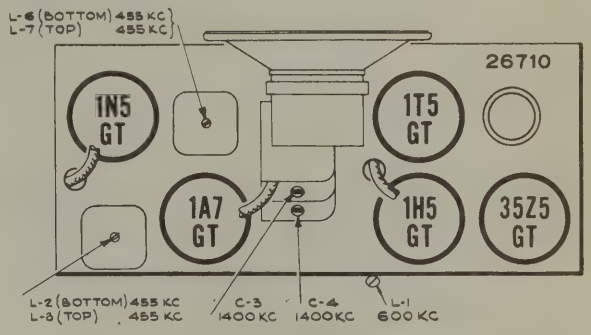
## Alignment Procedure

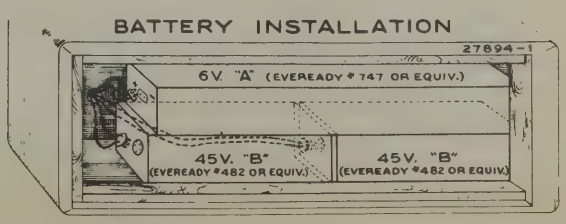
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1A7GT 1st-Det. grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | L2, L3, L6, L7 (1st and 2nd I-F transformers) |
| 2 | | 1,600 kc | 1,600 kc | C4 osc. |
| 3 | radiated signal near 600 kc | | signal frequency | L1 |
| 4 | radiated signal near 1,400 kc | | signal frequency | C3 |
| 5 | radiated signal near 600 kc | | signal frequency | L1 |

For steps 3, 4, and 5 the chassis must be in the cabinet and the batteries in place and connected. L-1 is then reached through the small hole in the cabinet which is normally covered with a small plug located farthest away from C-3 and C-3 is reached through an eyelet in the speaker grille. If a broadcast signal is used it should be weak to avoid a-v-c action. Turning loop to minimum pickup position will sometimes be helpful. If no broadcast signal is available connect test oscillator output to a suitable radiation loop located several feet away from receiver.

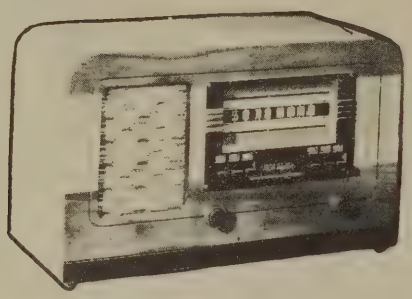


# MODEL X55

Chassis No. RC-473A

## Five-Tube, Single-Band, AC-DC Superheterodyne Receiver



### Electrical and Mechanical Specifications

| | |
|---|---|
| Frequency Range | 540-1,720 kc |
| Intermediate Frequency | 455 kc |
| Number of Push Buttons | Six |

Tube Complement

| | |
|---|---|
| (1) RCA-12SA7 | First Detector-Oscillator |
| (2) RCA-12SK7 | I-F Amplifier |
| (3) RCA-12SQ7 | Second Det., A-F and A.V.C. |
| (4) RCA-50L6GT | Beam Power Output |
| (5) RCA-35Z5GT | Rectifier |
| Dial Lamp (1) | Mazda No. 51, 7.5 volt, 0.2 amp. |

Power Output (125 volts, 60 cycle supply)

| | |
|---|---|
| Undistorted | 0.8 watts |
| Maximum | 1.4 watts |

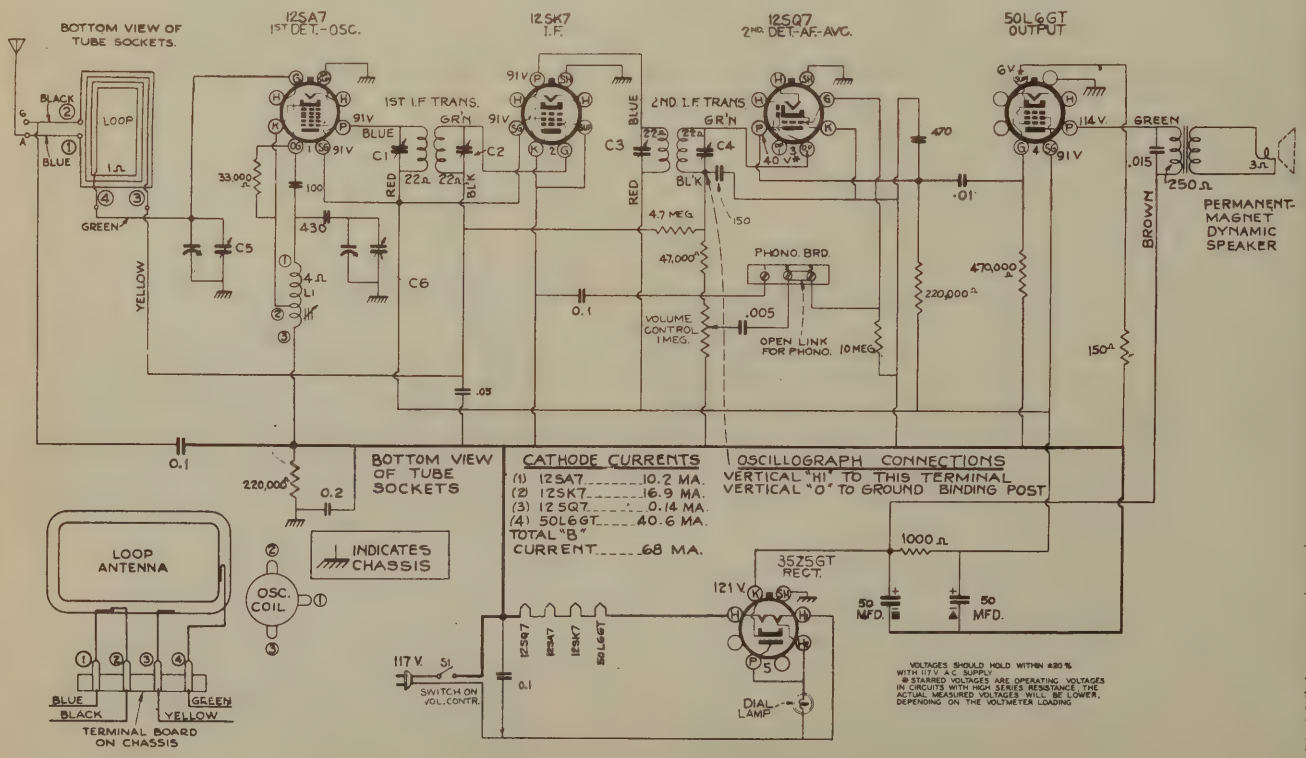
Power Supply Ratings

| | |
|---|---|
| A-C Rating | 105-125 volts, 50-60 cycles, 35 watts |
| D-C Rating | 105-125 volts, direct current, 35 watts |

Loudspeaker (RL 85-2)

| | |
|---|---|
| Type | 5-inch permanent magnet dynamic |
| Voice Coil Impedance | 4.5 ohms at 400 cycles |

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 9-7/16 | 15⅝ | 7 |
| Chassis Base Dimensions (inches) | 2-3/16 | 12⅛ | 5¾ |
| Overall Chassis Height | 6¾ inches | | |
| Weight (net) | 12 pounds | | |
| Weight (shipping) | 14 pounds | | |
| Tuning Drive Ratio | 10 to 1 | | |




*Schematic Circuit Diagram*

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown on the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the receiver ground binding post, and keep the oscillator output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should be set to the extreme left (low frequency) mark on the dial scale.

| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Ant. terminal | 455 kc | Quiet Point between 1,720-1,500 kc | C3 and C4 (2nd I-F trans.) |
| 2 | Ant. terminal | | | C1 and C2 (1st I-F trans.) |
| 3 | Ant. terminal in series with 200 mmfd. | 1,500 kc | 1,500 kc calibration mark | C6 (osc.) C5 (ant.) |
| 4 | | 600 kc | 600 kc calibration mark | L1 (osc.) (Rock in) |
| 5 | Repeat step 3. | | | |

After mounting chassis in cabinet, check the dial calibration on stations of known frequency. If calibration is not correct, move pointer to agree with dial calibration. Note.—Oscillator tracks above signal.

## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

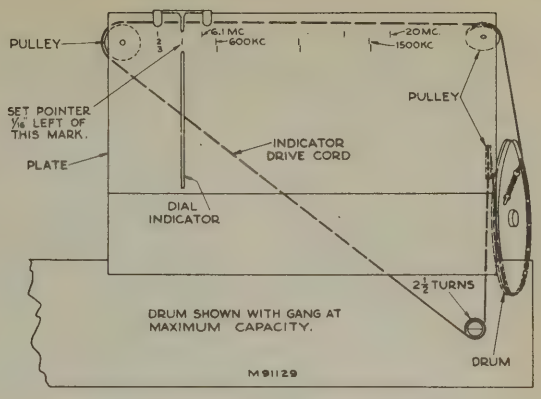
1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Turn the accessory switch to "Radio" position and accurately tune in the station for which the first button is to be set.

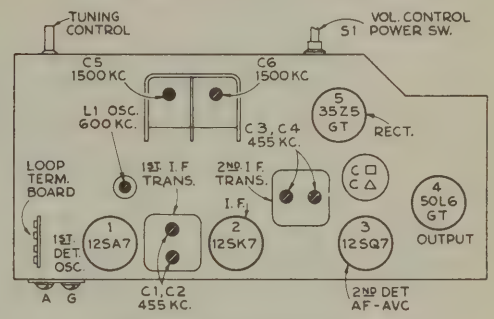
3. Press in push-button rod No. 1 (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

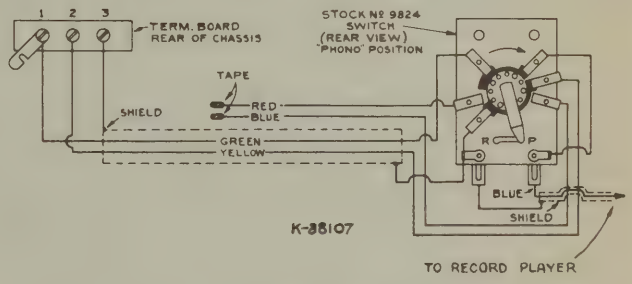
5. Proceed in a similar manner for the remainder of the push-buttons.




*Dial-Indicator and Drive Mechanism*




*Tube and Trimmer Locations*




*Record Player Connections, Using a No. 9824 Switch*

## REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLY (RC-473A)** |
| 33719 | Belt—Push button arm adjustment belt and rivets |
| 34024 | Board—"Antenna-Ground" board |
| 34025 | Board—"Radio-Phono" board |
| 33731 | Button—Push button |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 12725 | Capacitor—150 mmfd., moulded mica |
| 34213 | Capacitor—430 mmfd., mica |
| 30433 | Capacitor—470 mmfd., moulded mica |
| 14393 | Capacitor—.01 mfd., 300 volt |
| 11315 | Capacitor—.015 mfd., 400 volt |
| 32787 | Capacitor—.05 mfd., 400 volt |
| 4839 | Capacitor—0.1 mfd., 400 volt |
| 34505 | Capacitor—0.2 mfd., 300 volt |
| 34212 | Capacitor—Electrolytic comprising 2 sections of 50 mfd. each, 150 volts |
| 33724 | Coil—Oscillator coil (L1) |
| 33728 | Condenser—Tuning condenser and drum assembly |
| 33631 | Control—Volume control and power switch (S1) |
| 32634 | Cord—Tuning condenser drive cord |
| 33633 | Indicator—Station selector pointer |
| 11765 | Lamp—Pilot lamp—Mazda No. 51 |
| 33721 | Loop—Antenna loop |
| 33727 | Plate—Dial plate frame |
| 30880 | Resistor—150 ohm, ½ W. |
| 30152 | Resistor—1,000 ohms, 1 W. |
| 12454 | Resistor—33,000 ohms, ½ W. |
| 12412 | Resistor—47,000 ohm, ½ W. |
| 12264 | Resistor—220,000 ohms, ½ W. |
| 12285 | Resistor—470,000 ohms, ½ W. |
| 30271 | Resistor—4.7 megohm, ½ W. |
| 13601 | Resistor—10 megohm, ½ W. |
| 33735 | Screw—Push arm lock screw |
| 33725 | Shaft—Tuning condenser drive shaft and retainer |
| 31365 | Socket—Lamp socket |
| 31319 | Socket—Tube socket |
| 33720 | Spring—Push button arm return spring |
| 31418 | Spring—Tuning condenser drive cord spring |
| 33722 | Transformer—1st i.f. transformer |
| 34026 | Transformer—2nd i.f. transformer |
| 33726 | Washer—"C" washer for drive shaft |
| | **SPEAKER ASSEMBLIES (RL 85-2)** |
| 32907 | Cap—Cone center dust cap |
| 34554 | Cone—Speaker cone and voice coil |
| 34802 | Speaker—5-inch permanent magnet—less transformer |
| 34803 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31456 | Cover—8 protective covers for push-button markers |
| 33729 | Dial—Glass dial scale |
| 33637 | Escutcheon—Dial and button escutcheon |
| 30863 | Knob—Tuning, volume control, or power switch knob |
| 30900 | Spring—Retaining spring for knob or button |
| 33973 | Marker—1 set push-button marker |

# MODELS QU56C, QU56M

## Chassis No. RC-566A

## Five-Tube, Three-Band, AC, Superheterodyne Radio-Phonograph Combinations

### Electrical and Mechanical Specifications

**FREQUENCY RANGES**

Standard Broadcast ("A" Band)..... 540-1,720 kc (555-174 m)
Medium Wave ("B" Band)..... 2.3-7.0 mc (130-42.9 m)
Short Wave ("C" Band)..... 7.0-22.0 mc (42.9-13.6 m)

**INTERMEDIATE FREQUENCY** ..... 455 kc

**TUBE COMPLEMENT**

(1) RCA 6SA7..... 1st Detector-Oscillator
(2) RCA 6SK7..... I-F Amplifier
(3) RCA 6SQ7..... 2nd Detector AVC, and A.F. Amplifier
(4) RCA 6K6GT..... Power Output
(5) RCA 5Y3G..... Rectifier

**PILOT LAMP** ..... Mazda 44

**POWER OUTPUT**

Undistorted ..... 1.4 watts
Maximum ..... 2.3 watts

**LOUDSPEAKER**

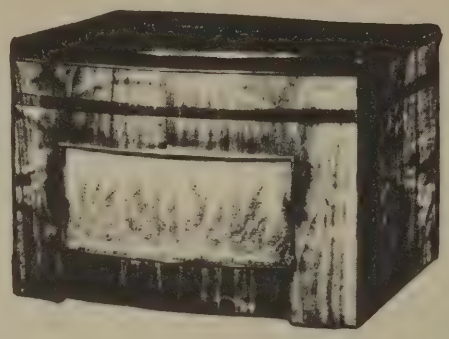
| | QU56M and C |
|---|---|
| Speaker No. | 92196-504 |
| Type | 6-in. x 9-in. Elliptical PM |
| V.C. Impedance at 400 cycles | 3.7 ohms |

**POWER SUPPLY RATING**

105-125 volts, 50-60 cycles..... 65 watts
105-125, 210-250 volts, 50-60 cycles..... 65 watts
105-125 volts, 25 cycles..... 65 watts

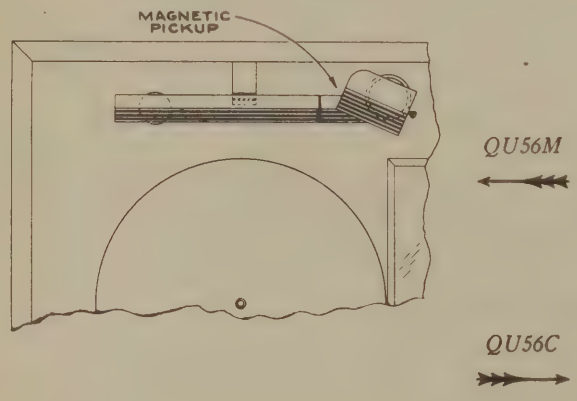
**PHONOGRAPH**

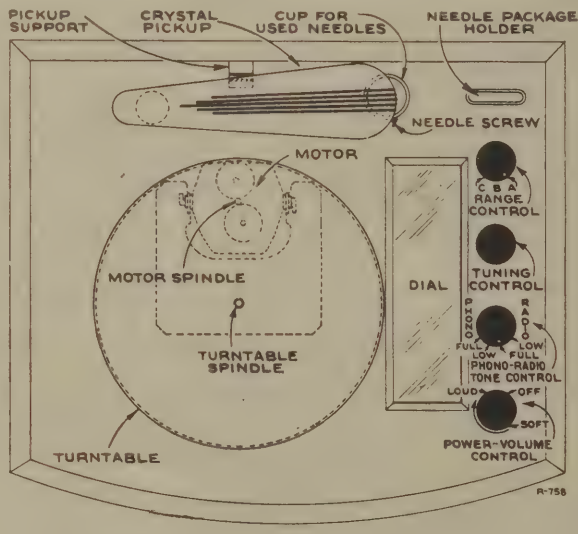
| | QU56M | QU56C |
|---|---|---|
| Type of Pickups | Magnetic | Crystal |
| Type of Mechanism | Manual | |
| Turntable Speed | 78 r.p.m. | |



**CABINET DIMENSIONS**

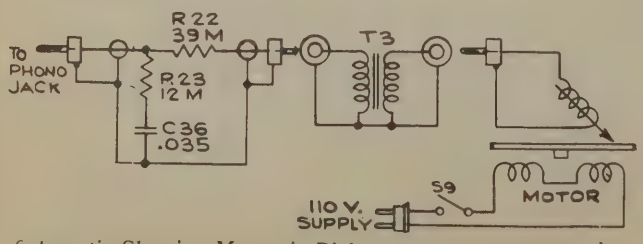
Height ..... 12⅝ inches
Width ..... 17½ inches
Depth ..... 14⅜ inches
Weight (net)..... 26½ pounds
Chassis Base Dimensions..... 10½ in. wide, 5 in. deep, 2 in. high
Over-all Chassis Height..... 8½ inches



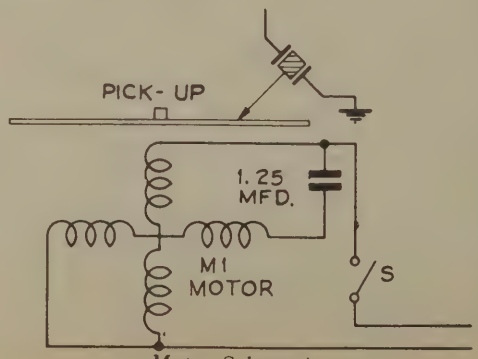




### Phonograph Information

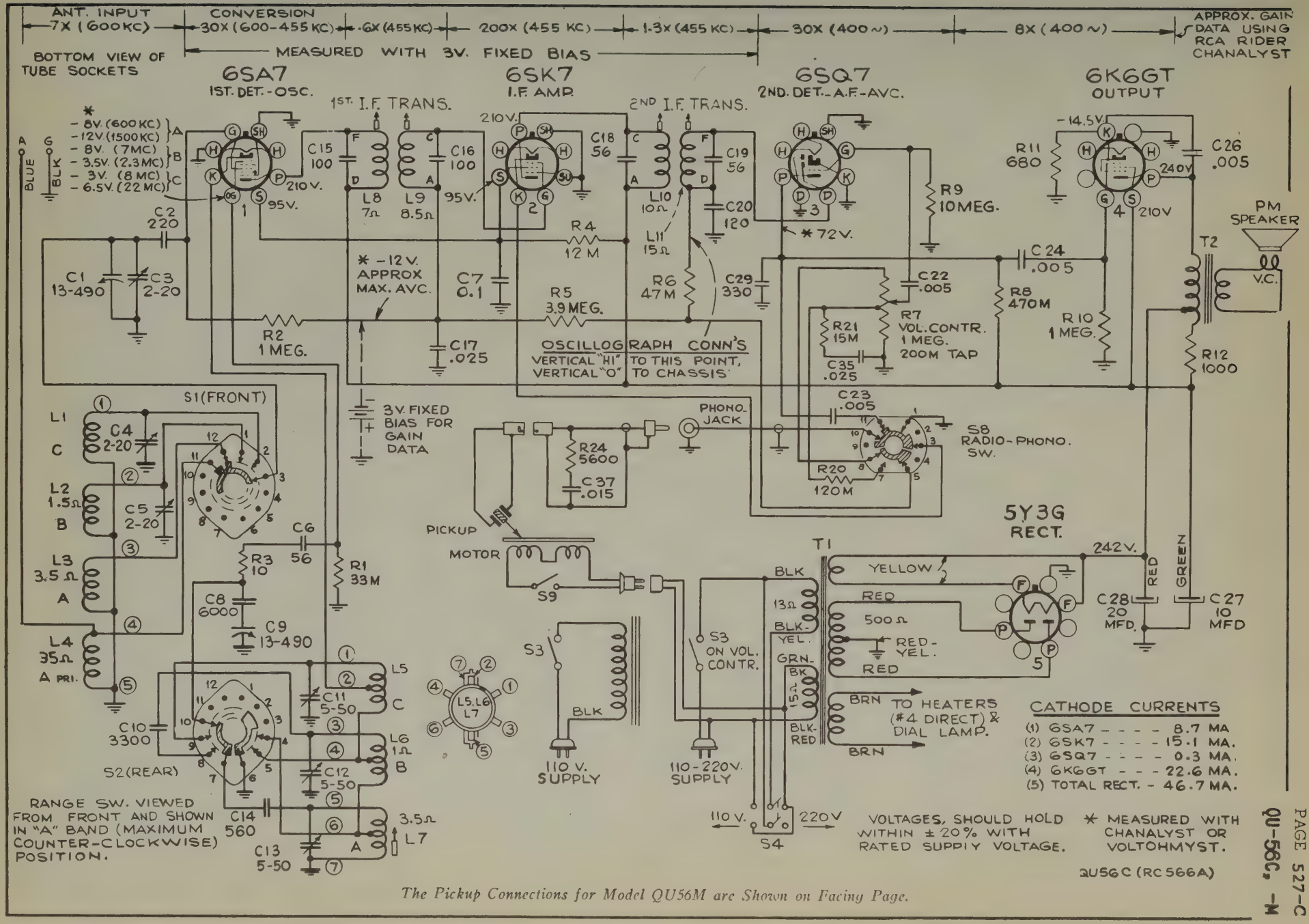
The QU56M is equipped with a magnetic pickup, the QU56C with a crystal pickup. The output of the crystal pickup is fed into the audio end of the receiver through a switch and compensating circuit. On instruments using a magnetic pickup, a transformer and compensating circuit are used between the pickup and the audio input (see schematic diagram). The transformer has two jacks, the larger one (primary) for input from the pickup and the smaller one (secondary) for output to the compensating circuit. The components of the compensating circuit are mounted externally to the chassis on a terminal board in the cabinet.




*Schematic Showing Magnetic Pickup Connections (QU56M)*




*Motor Schematic*

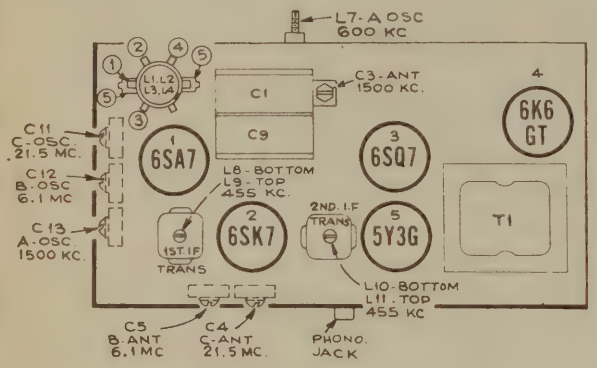



*The Pickup Connections for Model QU56M are Shown on Facing Page.*

# Alignment Procedure

**Precautionary Lead Dress.**

1. "B" and "C" band antenna trimmer leads to be dressed away from "B" and "C" band oscillator trimmer leads.
2. Excess power transformer leads to be dressed between power transformer bell and rear apron of chassis.
3. R9 1st Audio grid lead, dressed down to chassis.
4. "B" Band Antenna coil lead to be wired so that it is dressed around "B" band section in a clockwise direction to coil lug in order to obtain proper "B" band tracking.
5. "C" band oscillator cathode lead to be dressed around coil in clockwise direction as shown in sample.
6. Dress tone control capacitor C23 up and away from A.C. switch leads.
7. Dress capacitor C25 from phono. socket to 6SQ7 socket up and away from all parts and leads.
8. Dress audio coupling C22 from volume control clear of A.C. wiring.
9. Red lead from A.C. switch to power switch to be dressed down against base.
10. Drive front gang mounting screw first.
11. Green lead to phono. socket dress up from chassis.
12. Dress A.C. switch leads to side apron.
13. Dress R20, R21 close to front apron.



Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

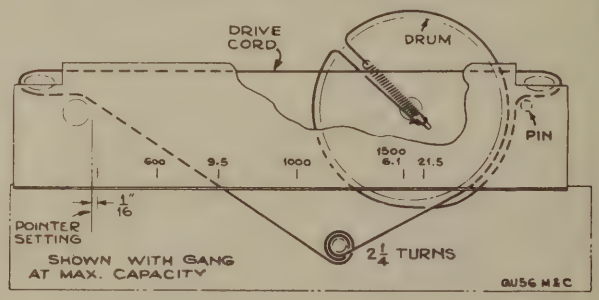
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be 1/16 inch to the left of first mark on dial backing plate.

| Steps | Range Switch | Connect high side test osc. to— | Tune test osc. to— | Turn radio dial to | Adjust following for max. peak output |
|---|---|---|---|---|---|
| 1 | "A" | I-F grid in series with .01 mfd. | 455 kc | "A" band quiet point at high freq. end. | L10, L11 (2nd I-F trans.) |
| 2 | | 1st det. grid, in series with .01 mfd. | | | L9, L8† (1st I-F trans.) |
| 3 | | Antenna lead in series with 200 mmf. | 1,500 kc (200 m) | 1,500 kc mark (5th mark) | C13, C3 |
| 4 | | | 600 kc (500 m) | 600 kc mark (2nd mark) | L7** Rock gang |
| 5 | | | Repeat steps 3 and 4. | | |
| 6 | "B" | Antenna lead in series with 300 ohms | 6.1 mc | 6.1 mc mark (5th mark) | C12* (osc.) C5 (ant.) |
| 7 | "C" | | 21.5 mc | 21.5 mc mark (6th mark) | C11,* C4 |

* Use minimum capacity peak if two peaks can be obtained.
** Rock gang slightly for peak output.
† Do not readjust L11 or L10 when test oscillator is applied to the 6SA7 Grid.

NOTE: Oscillator tracks above signal on all bands.




# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC 566-A)** |
| 35761 | Capacitor—Electrolytic—comprising 1 section of 20 mfd., 350 volts, and 1 section of 10 mfd., 350 volts |
| 32830 | Capacitor—Mica trimmer—comprising 2 sections of 2-20 mmfd. each |
| 32829 | Capacitor—Mica trimmer—comprising 3 sections of 5-60 mmfd. each |
| 12723 | Capacitor—56 mmfd., moulded |
| 30949 | Capacitor—56 mmfd., unmoulded |
| 30904 | Capacitor—100 mmfd. |
| 12724 | Capacitor—120 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 12952 | Capacitor—330 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 31403 | Capacitor—3,300 mmfd. |
| 31405 | Capacitor—6,000 mmfd. |
| 4838 | Capacitor—.005 mfd., 1,000 volts |
| 33584 | Capacitor—.005 mfd., 1,200 volts |
| 4870 | Capacitor—.025 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 32821 | Coil—Antenna coil—"A," "B," and "C" bands |
| 38292 | Coil—Oscillator coil—"A," "B," and "C" bands |
| 38287 | Condenser—Variable tuning condenser |
| 38408 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 42 in. overall lgth.) |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 36237 | Drum—Tuning condenser drive drum |
| 38331 | Indicator—Station selector indicator |

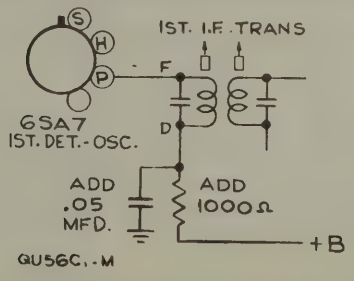
| STOCK No. | DESCRIPTION |
|---|---|
| 38432 | Plate—Dial back plate complete with pulleys—less dial |
| 30868 | Plug—2-contact female plug for motor cable |
| 5119 | Plug—3-contact female plug for speaker cable |
| 31373 | Pulley—Drive cord pulley (¾-in. dia.) |
| 32289 | Pulley—Drive cord pulley (⅛-in. dia.) |
| 13988 | Resistor—10 ohms, ½ watt |
| 32686 | Resistor—680 ohms, 1 watt |
| 30152 | Resistor—1,000 ohms, 1 watt |
| 43765 | Resistor—12,000 ohms, 2 watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 32809 | Resistor—3.9 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 38433 | Shaft—Tuning knob shaft |
| 35772 | Shield—Bottom end shield for power transformer |
| 35709 | Shield—Top end shield for power transformer |
| 36932 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 38431 | Switch—Range switch |
| 38434 | Switch—Tone control switch |
| 32827 | Switch—Voltage change switch |
| 35636 | Transformer—First I.F. transformer |
| 35628 | Transformer—Second I.F. transformer |

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 35758 | Transformer—Power transformer — 105/125 volts, 25 cycle—less end shields |
| 35757 | Transformer—Power transformer — 105/125 volts, 50/60 cycle—less end shields |
| 35759 | Transformer—Power transformer — 105/125–210/225 volts, 50/60 cycle |
| 33726 | Washer—"C" washer for tuning shaft and pulley, No. 31373 |
| | **PICKUP AND ARM ASSEMBLY (CRYSTAL TYPE)** |
| 33591 | Arm—Pickup arm shell only |
| 38435 | Arm—Pivot arm and shaft complete |
| 34758 | Bushing—Rubber bushing and metal bushing for pivot arm |
| 33122 | Crystal—Pickup crystal complete |
| 33529 | Screw—Needle screw |
| | **PICKUP AND ARM ASSEMBLY (MAGNETIC TYPE)** |
| 38420 | Arm—Pickup arm shell only—less mechanism, support arm, pins and shielded cable |
| 38436 | Arm—Pickup support arm complete—less rubber bushings |
| 14291 | Armature—Pickup armature assembly |
| 34550 | Bushing—Rubber bushing for support arm |
| 32635 | Cable—Pickup lift cable |
| 38215 | Cable—Shielded pickup cable |
| 38216 | Catch—Pickup head catch |
| 14672 | Coil—Pickup coil |
| 38197 | Cover—Insulating cover |
| 38421 | Head—Pickup head shell only |
| 37291 | Mechanism—Pickup mechanism complete |
| 38198 | Pin—Pin to attach head to arm (⅛-in. dia.) Pkg. 2 |
| 38199 | Pin—Pin to attach support arm to shell (3/32-in. dia.) |
| 38196 | Screw—Needle screw |
| 38217 | Screw—Pickup mechanism support screw—Pkg. 2 |
| 38213 | Spring—Needle point weight adjustment spring |
| 38214 | Stud—Shouldered stud to hold tension spring and head catch |
| | **MOTOR ASSEMBLIES** |
| 36986 | Arm—Drive wheel or idler wheel support arm |
| 36988 | Armature—Armature complete for 105-125 volts, 50 cycle motor |
| 36987 | Armature—Armature complete for 105-125 volts, 60 cycle motor |
| 36989 | Bushing—Motor mounting rubber bushings |
| 36991 | Capacitor—Motor capacitor for 105-125 volts, 50 cycle motor |
| 36990 | Capacitor—Motor capacitor for 105-125 volts, 60 cycle motor |
| 36993 | Cover—Bakelite top end shell for 105-125 volts, 50 cycle motor |
| 36992 | Cover—Bakelite top end shell for 105-125 volts, 60 cycle |
| 36985 | Motor—105-125 volts, 50 cycle motor—less pulleys, capacitor and cradle |
| 36984 | Motor—105-125 volts, 60 cycle motor—less pulleys, capacitor and cradle |
| 36995 | Plate—Motor support plate complete with turntable bearing |
| 36997 | Spring—Idler arm tension spring |
| 36996 | Spindle—Turntable spindle |
| 36994 | Wheel—Rubber tired idler or drive wheel |
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 34419 | Base—Pickup arm mounting base |
| 36772 | Cam—Automatic switch cam |
| 36771 | Mounting—Pickup arm mounting |
| 36773 | Plug—3-prong male plug |
| 36521 | Spring—Cam tension spring |
| 38995 | Switch—Automatic switch—less cam, base, and shaft |
| | **SPEAKER ASSEMBLIES (92196-504)** |
| 37947 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male speaker plug |
| 37948 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38996 | Cam—Automatic switch cam |
| 4288 | Cap—Connector cap for pickup—Model QU56C |
| 11315 | Capacitor—.015 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 38354 | Clamp—Dial clamp |
| 38437 | Cup—Used needle cup |
| 36763 | Decalcomania—Control panel decal |
| 38441 | Decalcomania—"His Master's Voice" decal—Pkg. 5 |
| 35392 | Decalcomania—"RCA Victrola" decal |
| 38440 | Dial—Glass dial scale |
| 4286 | Ferrule—Ferrule and bushing for pickup—Model QU56C |
| 38334 | Knob—Tone switch or range switch knob |
| 37256 | Knob—Tuning or volume control knob |
| 11891 | Lamp—Dial lamp |
| 38439 | Mounting—Motor mounting hardware (1 set) |
| 30870 | Plug—2-contact female plug for motor leads |
| 31572 | Plug—3-prong male plug for motor leads |
| 33960 | Plug—Phonograph output plug—Model QU56M |
| 31048 | Plug—Single prong male plug for phono input cable or pickup cable |
| 36246 | Receptacle—Packaged needle receptacle |
| 13714 | Resistor—5,600 ohms, ½ watt |
| 30436 | Resistor—12,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 30900 | Spring—Retaining spring for knobs |
| 38870 | Support—Pickup arm support for Model QU56C |
| 38871 | Support—Pickup arm support for Model QU56M |
| 14609 | Transformer—Input transformer for Model QU56M |
| 38438 | Turntable |

**Instability:**

Development of appreciable RF impedance in the electrolytic filter capacitor creates common coupling and may cause IF oscillation. To eliminate this possibility, an RC filter is connected in the +B lead of the 1st-detector plate circuit, as shown in accompanyng sketch.




*In Q56-C, -M, an RC filter is added in the 1st-detector plate circuit.*

# MODEL R-56 Two-Tube, A-C, Electric Phonograph

## Specifications

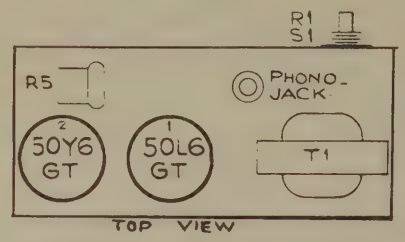
TUBE COMPLEMENT
(1) RCA 50L6GT ..... Power Amplifier
(2) RCA 50Y6GT ..... Rectifier

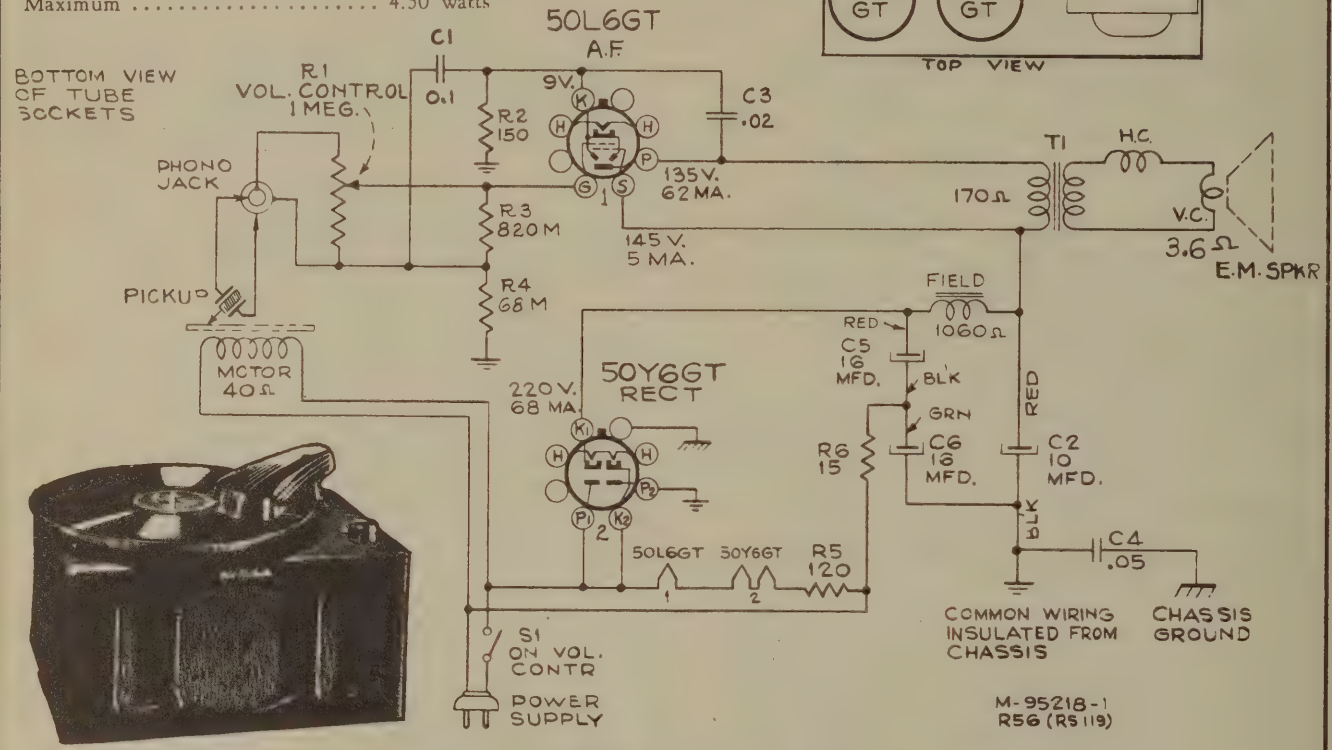
POWER SUPPLY
105-125 volts, 60 cycles ..... 50 watts

LOUDSPEAKER
RL-86-C1 ..... 5-inch Electrodynamic
V. C. Impedance at 400 cycles ..... 4 ohms

POWER OUTPUT RATING
Undistorted ..... 2.25 watts
Maximum ..... 4.50 watts

PHONOGRAPH
Motor ..... Self-starting Induction
Drive ..... Rim Drive, 78.25 R.P.M.
Pickup ..... Crystal






## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **AMPLIFIER ASSEMBLY** |
| 39684 | Capacitor—Electrolytic, one section of 10 mfd., 250 volts, and one section of 16 mfd., 150 volts |
| 36248 | Capacitor—.02 mfd., 700 volts |
| 32787 | Capacitor—.05 mfd., 400 volts |
| 43763 | Capacitor—0.1 mfd., 400 volts |
| 39500 | Capacitor—16 mfd., 150 volts |
| 38410 | Control—Volume control and power switch |
| 11565 | Resistor—15 ohms, ½ watt |
| 39685 | Resistor—120 ohms, 3.1 watt |
| 30785 | Resistor—150 ohms, 1 watt |
| 14138 | Resistor—68,000 ohms, ½ watt |
| 30161 | Resistor—820,000 ohms, ½ watt |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 39683 | Transformer—Output transformer |
| | **PICKUP AND ARM ASSEMBLY** |
| 33591 | Arm—Pickup arm only—less cartridge, and pivot shaft and base assembly |
| 34482 | Base—Pickup arm base—less pivot shaft |
| 34758 | Bushing—One rubber and one metal bushing for pickup arm |
| 39686 | Crystal—Pickup crystal cartridge |
| 34311 | Ring—Retaining ring for pivot shaft |
| 33974 | Screw—Needle screw |
| 34481 | Shaft—Pickup arm pivot shaft |
| | **SPEAKER ASSEMBLY (RL-86C-1)** |
| 32907 | Cap—Cone center dust cap |

| STOCK No. | DESCRIPTION |
|---|---|
| 39688 | Coil—Field coil |
| 39689 | Coil—Neutralizing coil |
| 39539 | Cone—Cone, voice coil, center suspension, and dust cap |
| | **MOTOR ASSEMBLY** |
| 36402 | Arm—Idler arm and stud for motor |
| 20134 | Ball—Steel ball for turntable bearing |
| 36404 | Motor—105-125 volts, 60 cycle motor |
| 36403 | Mounting—One set of motor mounting grommets, spacers, and washers |
| 36406 | Plate—Idler arm guide plate for motor |
| 36401 | Plate—Motor plate complete with bearing and ball |
| 30340 | Retainer—Motor fan retainer |
| 30585 | Spring—Motor idler arm tension spring |
| 36399 | Turntable—Turntable and bushing complete with spindle |
| 33726 | Washer—"C" washer for motor idler wheel |
| 36405 | Washer—Flat washer for motor idler wheel |
| 36274 | Wheel—Motor idler wheel and bearing |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38990 | Foot—Cabinet foot |
| 38710 | Knob—Volume control knob |
| 33530 | Mounting—Rubber grommet, washers, and nut for mounting pickup arm |
| 39690 | Screw—Finish screw and washer for mounting amplifier (1 set) |

# Models K-60 and K-80

Chassis Nos. RC-415 RC-415-A

## Six and Eight-Tube, Three-Band, AC, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,720 kc |
| Medium Wave | 2.3-7.0 mc |
| Short Wave | 7.0-22.0 mc |
| INTERMEDIATE FREQUENCY | 455 kc |

### Model K-60

TUBE COMPLEMENT

(1) RCA-6SA7 ..... 1st Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6H6 ..... 2nd Detector, A.V.C.
(4) RCA-6SF5 ..... A-F Amplifier
(5) RCA-6F6-G ..... Power Output
(6) RCA-5Y3-G ..... Rectifier

PILOT LAMPS (2) ..... Mazda No. 44, 6.3 volts, 0.25 amp

POWER OUTPUT RATING

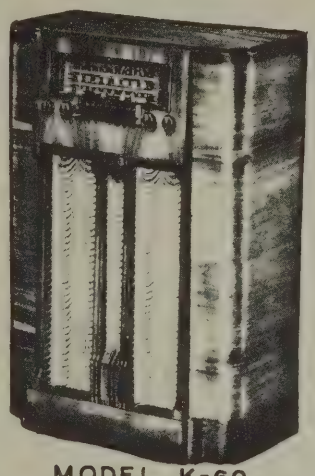
Undistorted ..... 2.5 watts
Maximum ..... 4.5 watts

LOUDSPEAKER (RL-70H-6)

Type ..... 12-inch electrodynamic
V.C. Impedance ..... 2.2 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A. 105-125 volts, 50-60 cycles, 75 watts
Rating B. 105-125 volts, 25-60 cycles, 75 watts
Rating C. ... 100-130, 140-160, 195-250 volts, 40-60 cycles, 75 watts



MODEL K-60

MODEL K-80

### Model K-80

TUBE COMPLEMENT

(1) RCA-6SA7 ..... 1st Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-6SF5 ..... Inverter
(5) RCA-6F6-G ..... Power Output
(6) RCA-6F6-G ..... Power Output
(7) RCA-5Y3-G ..... Rectifier
(8) RCA-6U5/6G5 ..... Tuning Indicator

PILOT LAMPS (2)
Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

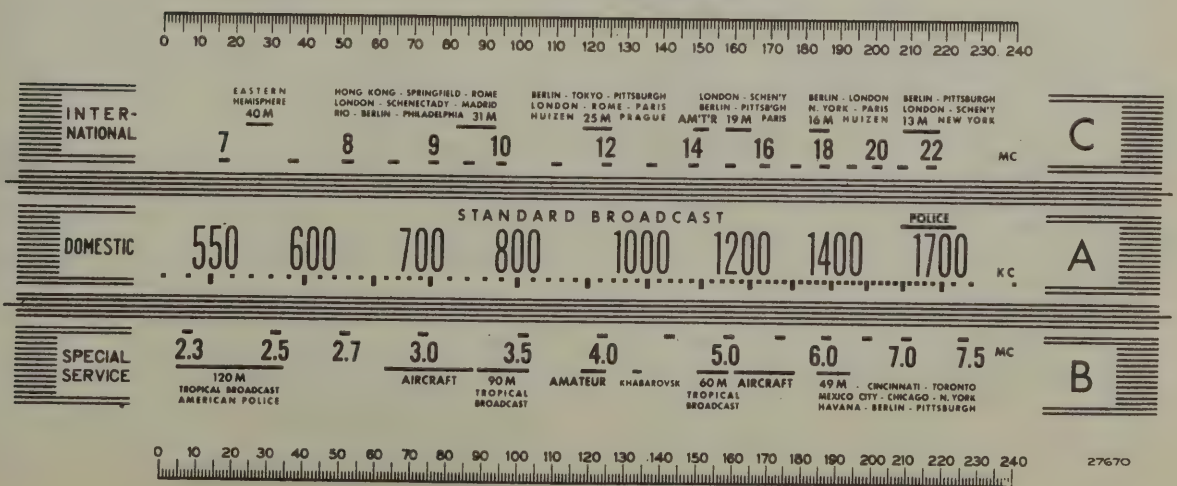
Undistorted ..... 5.0 watts
Maximum ..... 5.5 watts

LOUDSPEAKER (RL-70J-1)

Type ..... 12-inch electrodynamic
V.C. Impedance ..... 2.2 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A ..... 105-125 volts, 50-60 cycles, 85 watts
Rating B ..... 105-125 volts, 25-60 cycles, 85 watts
Rating C ..... 100-130, 140-160, 195-250 volts, 40-60 cycles, 85 watts


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240
INTER-NATIONAL
EASTERN HEMISPHERE 40 M
HONG KONG - SPRINGFIELD - ROME
LONDON - SCHENECTADY - MADRID
RIO - BERLIN - PHILADELPHIA 31 M
BERLIN - TOKYO - PITTSBURGH
LONDON - ROME - PARIS
HUIZEN 25 M PRAGUE
LONDON - SCHEN'Y
BERLIN - PITTSBURGH
AM'T'R 19 M PARIS
BERLIN - LONDON
N. YORK - PARIS
16 M HUIZEN
BERLIN - PITTSBURGH
LONDON - SCHEN'Y
13 M NEW YORK
7 8 9 10 12 14 16 18 20 22 MC
C
STANDARD BROADCAST
POLICE
DOMESTIC
550 600 700 800 1000 1200 1400 1700 KC
A
SPECIAL SERVICE
2.3 2.5 2.7 3.0 3.5 4.0 5.0 6.0 7.0 7.5 MC
120 M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90 M TROPICAL BROADCAST
AMATEUR
KHABAROVSK
60 M AIRCRAFT TROPICAL BROADCAST
49 M - CINCINNATI - TORONTO
MEXICO CITY - CHICAGO - N. YORK
HAVANA - BERLIN - PITTSBURGH
B
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240
27670

*Receiver Dial Scales, and Corresponding 0-240° Calibration Scales*

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord-Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical and directly under the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

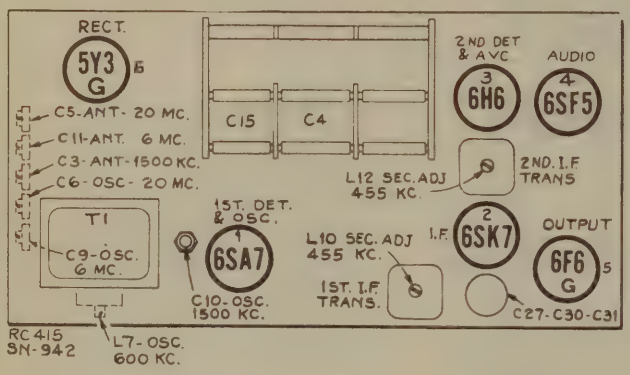
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

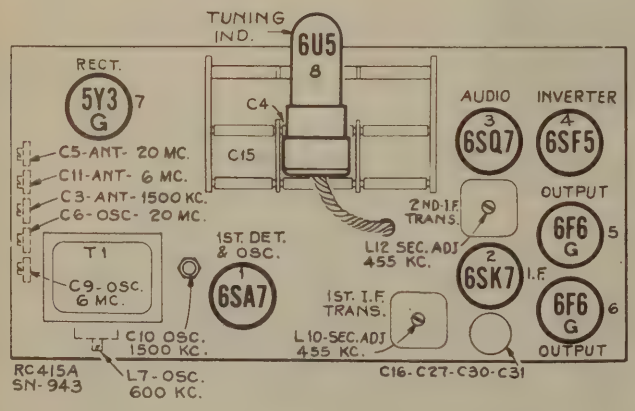
| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6SK7 grid in series with .01 mfd. | 455 kc | "A" Band Quiet Point between 550-750 kc | L11 and L12 (2nd I-F Trans.) |
| 2 | 6SA7 grid in series with .01 mfd. | | | L9 and L10 (1st I-F Trans.) |
| 3 | Ant. terminal in series with 300 ohms | 20 mc | 20 mc (200°) "C" Band | C6 (osc.)* C5 (ant.) |
| 4 | | 6 mc | 6 mc (187.5°) "B" Band | C9 (osc.)** C11 (ant.) |
| 5 | Ant. terminal in series with 200 mmfd. | 1,500 kc | 1,500 kc (198.25°) "A" Band | C10 (osc.) C3 (ant.) |
| 6 | | 600 kc | 600 kc (39.75°) "A" Band | L7 (osc.) Rock Gang |
| 7 | Repeat step 5. | | | |

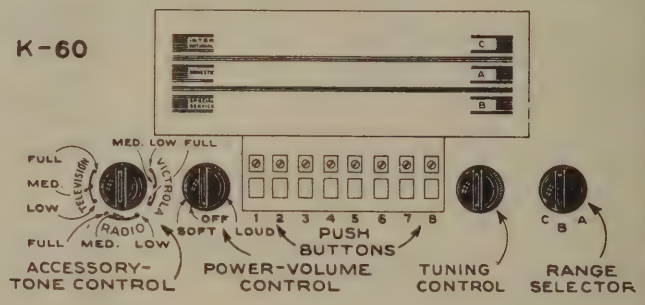
* Use **minimum** capacity peak if two can be obtained. Check to determine that C6 has been adjusted to correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

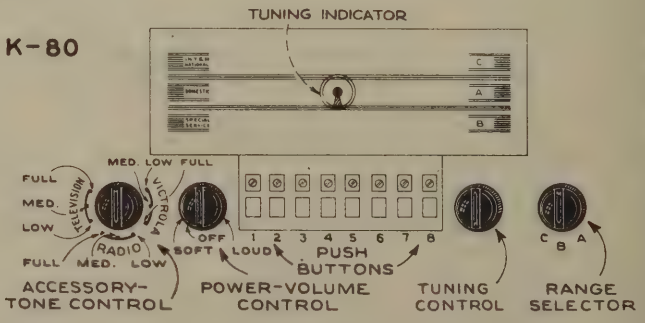
** Use **minimum** capacity peak if two can be obtained. Check to determine that C9 has been adjusted to correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

Note: Oscillator tracks above signal on all bands.



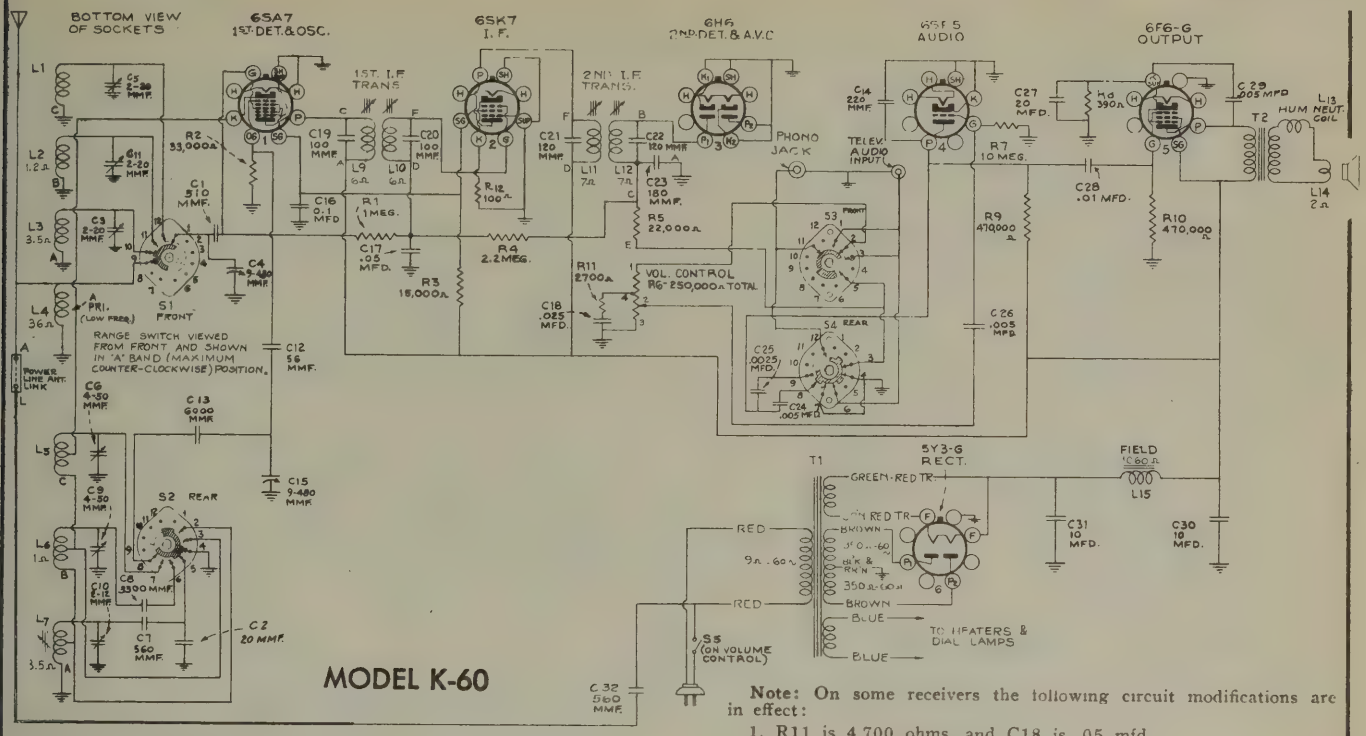



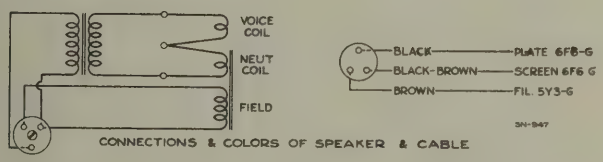

## Push Button Adjustment

The push-buttons should be adjusted for eight favorite stations after the receiver is operating, and has had a brief warm-up period.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-button screws in back of the station-marker recesses
2. Set Accessory-Tone Knob to "Radio" and turn the range selector to "A."
3. Press in the tuning knob and accurately tune in the first station.
4. With station accurately tuned in, press in the first push-button and tighten the screw.
5. Place the station marker tab in the recess.
6. Proceed in a similar manner to adjust the remainder of the push-buttons.




**Note:** On some receivers the following circuit modifications are in effect:

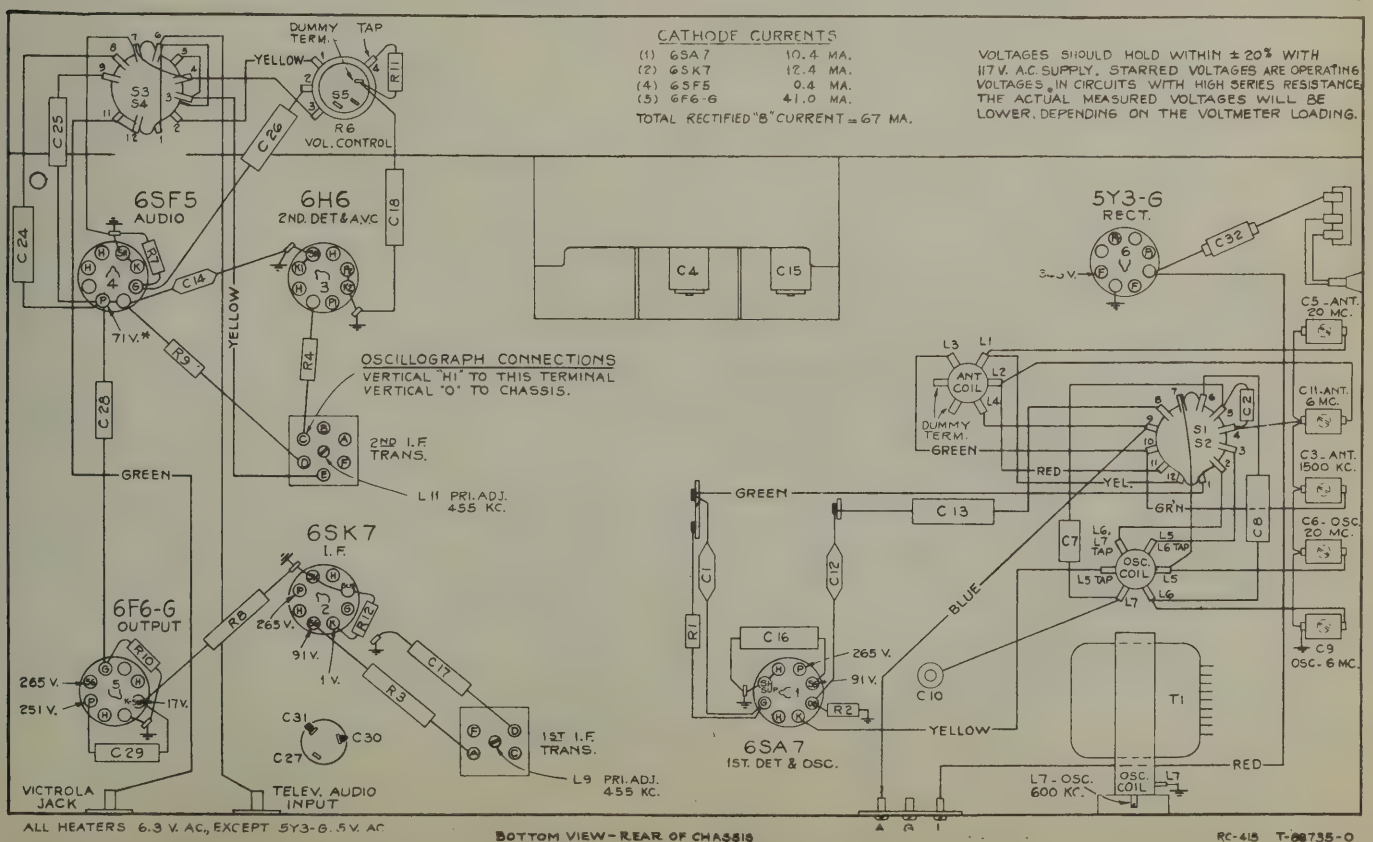
1. R11 is 4,700 ohms, and C18 is .05 mfd.
2. C1 is 470 mmfd.
3. There are three types of 2nd I-F transformers in use.

a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown above.

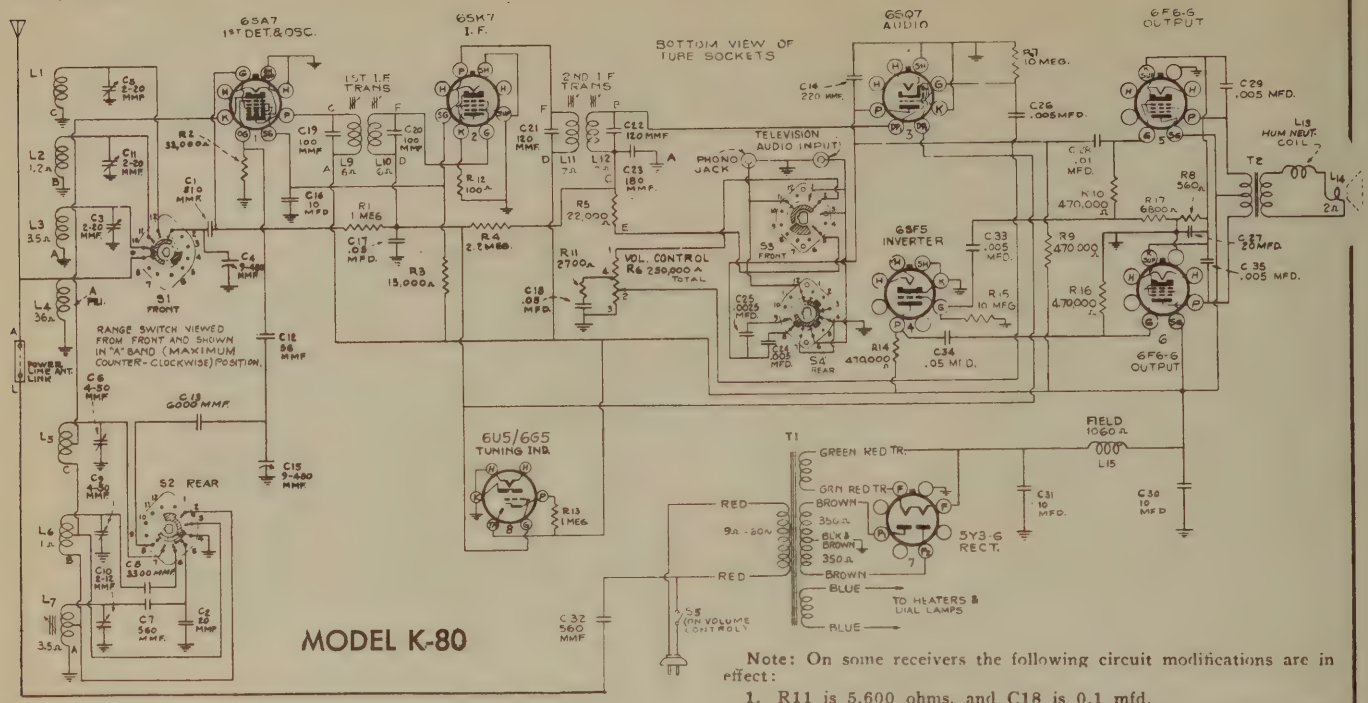
b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.

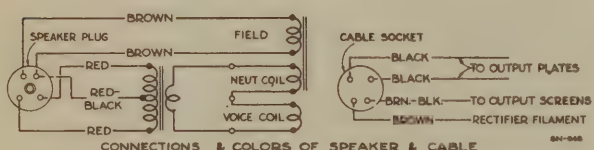
c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the above diagram.

**Important:** Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the diagram.


CATHODE CURRENTS
(1) 6SA7 10.4 MA.
(2) 6SK7 12.4 MA.
(4) 6SF5 0.4 MA.
(5) 6F6-G 41.0 MA.
TOTAL RECTIFIED "B" CURRENT = 67 MA.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY. STARRED VOLTAGES ARE OPERATING VOLTAGES. IN CIRCUITS WITH HIGH SERIES RESISTANCE THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
DUMMY TERM.
TAP
YELLOW
R6 VOL. CONTROL
6SF5 AUDIO
6H6 2ND. DET. & A.V.C.
5Y3-G RECT.
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS.
2ND I.F. TRANS.
L11 PRI. ADJ. 455 KC.
6SK7 I.F.
6F6-G OUTPUT
1ST I.F. TRANS.
L9 PRI. ADJ. 455 KC.
6SA7 1ST. DET. & OSC.
VICTROLA JACK
TELEV. AUDIO INPUT
ANT. COIL
OSC. COIL
C5 - ANT. 20 MC.
C11 - ANT. 6 MC.
C3 - ANT. 1500 KC.
C6 - OSC. 20 MC.
C9 OSC. - 6 MC.
L7 - OSC. 600 KC.
GREEN
RED
YEL.
GRN.
BLUE
YELLOW
ALL HEATERS 6.3 V. AC., EXCEPT 5Y3-G. 5 V. AC
BOTTOM VIEW - REAR OF CHASSIS
R-F WIRING & SOCKET VOLTAGES
RC-415 T-88735-0

# K60, K80



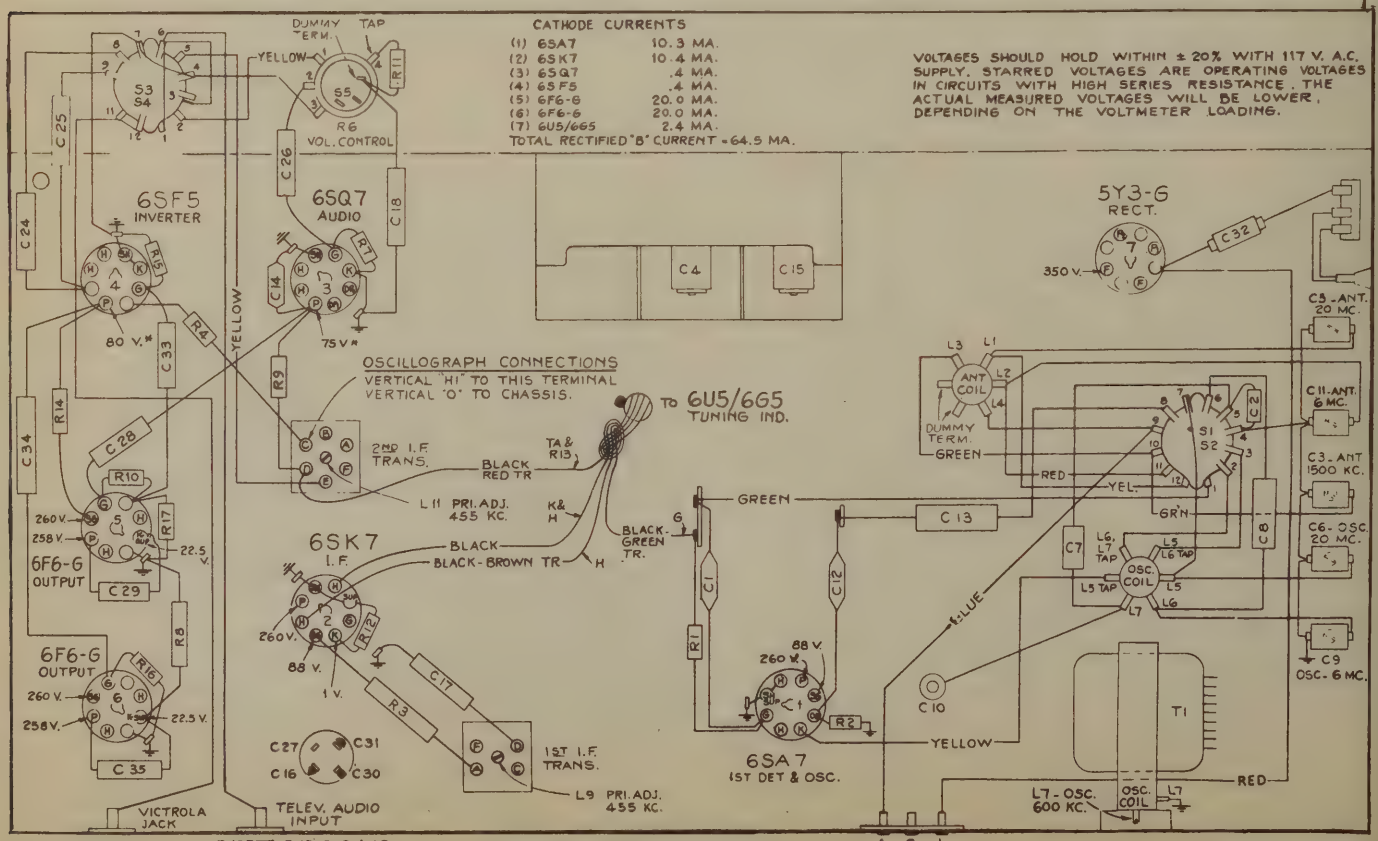




CONNECTIONS & COLORS OF SPEAKER & CABLE

Note: On some receivers the following circuit modifications are in effect:

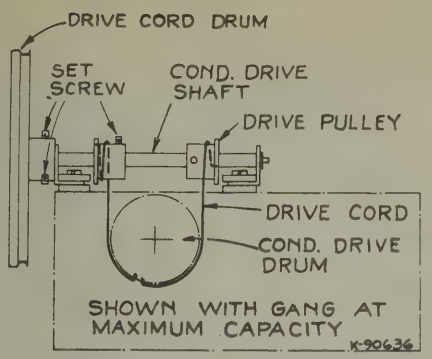
1. R11 is 5,600 ohms, and C18 is 0.1 mfd.
2. C1 is 470 mmfd.; R15 is 2,700 ohms and is connected from cathode of 6SF5 Inverter to ground; R17 is 15,000 ohms; and C33 is omitted.
3. There are three types of 2nd I-F transformers in use.
   a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown above.
   b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.
   c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the above diagram.

**Important:** Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the diagram.

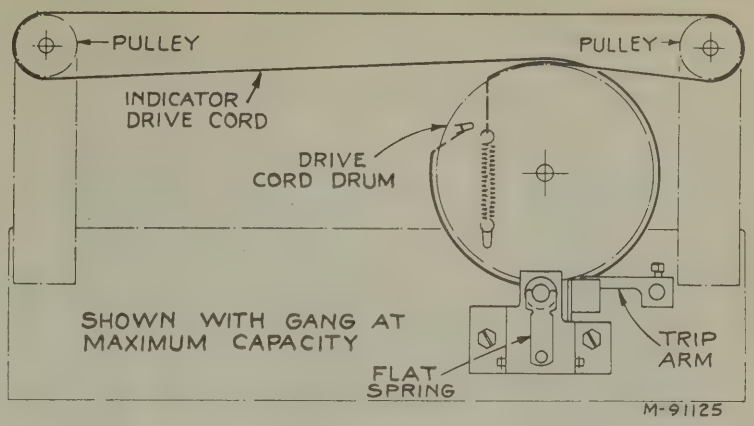



R-F WIRING & SOCKET VOLTAGES

RC-415A SN-944

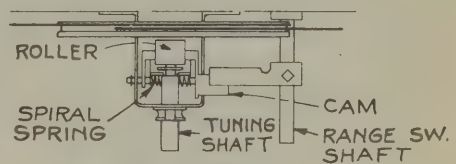



CONDENSER DRIVE CORD ARRANGEMENT




Note: In the Dial Indicator Drive Cord Assembly drawing at the right the mechanism is shown with the range switch in the "A" band position. In this position the trip arm on the range switch shaft must be adjusted so that when push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

DIAL INDICATOR DRIVE CORD ASSEMBLY.




TOP VIEW

## Replacement Parts MODEL K-60

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-415)** |
| 33620 | Arm—Push arm and cam assembly on tuning unit—less lock screw |
| 33432 | Arm—Trip arm and set screw located on range switch shaft |
| 33430 | Board—Antenna and ground terminal board |
| 12714 | Capacitor—Air-trimmer, 2-12 mmfd. (C10) |
| 33429 | Capacitor—Trimmer capacitor bank, 2 sections 4-50 mmfd., and 3 sections 2-20 mmfd. (C3, C5, C6, C9, C11) |
| 31871 | Capacitor—20 mmfd. (C2) |
| 12723 | Capacitor—56 mmfd. (C12) |
| 30904 | Capacitor—100 mmfd. (C19, C20) |
| 12404 | Capacitor—120 mmfd. (C21, C22) |
| 14712 | Capacitor—180 mmfd. (C23) |
| 30232 | Capacitor—220 mmfd. (C14) |
| 30608 | Capacitor—510 mmfd. (C1) |
| 31433 | Capacitor—560 mmfd. (C7) |
| 12537 | Capacitor—560 mmfd. (C32) |
| 31403 | Capacitor—3,300 mmfd. (C8) |
| 31405 | Capacitor—6,000 mmfd. (C13) |
| 5107 | Capacitor—.0025 mfd. (C25) |
| 4838 | Capacitor—.005 mfd. (C24, C26, C29) |
| 4937 | Capacitor—.01 mfd. (C28) |
| 32787 | Capacitor—.05 mfd., 400 V. (C17, C18) |
| 4839 | Capacitor—0.1 mfd. (C16) |
| 32240 | Capacitor—Electrolytic, 2 sections 10 mfd., one section 20 mfd. (C27, C30, C31) |
| 32821 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil (L5, L6, L7) |
| 33424 | Control—Tone control (S3, S4) |
| 33425 | Control—Volume control and power switch (R6, S5) |
| 32635 | Cord—Condenser drive cord |
| 32634 | Cord—Indicator drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 33627 | Drum—Condenser drive drum |
| 33174 | Drum—Drive cord drum with set screws and calibrator dial |
| 11891 | Lamp—Dial lamp |
| 33625 | Plate—Front guide plate for push arms |
| 5119 | Plug—3-contact female for speaker cable |
| 33427 | Pulley—Drive cord pulley and mounting bracket |
| 33626 | Pulley—Drive pulley—less bronze drive cord |
| 31388 | Resistor—390 ohms, 1 watt (R8) |
| 30146 | Resistor—4,700 ohms, ½ watt (R11) |
| 33489 | Resistor—15,000 ohms, 2.5 watt (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9, R10) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R7) |
| 30340 | Retainer—Retainer for shaft of tuning shaft cam and arm |
| 33419 | Roller—Fricton roller for tuning knob shaft |
| 4669 | Screw—No. 8-32 square head set screw for drum |
| 33621 | Screw—Push arm lock screw |
| 33624 | Shaft—Tuning condenser drive shaft and washer |
| 33422 | Shaft—Tuning shaft—less friction roller |
| 31364 | Socket—Dial lamp socket |
| 14278 | Socket—Phonograph or Television input socket |
| 31319 | Socket—Tube socket |
| 33175 | Spring—Drive cord tension spring |
| 33623 | Spring—Drive drum cord spring |
| 33622 | Spring—Push arm return spring |
| 33421 | Spring—Tuning shaft flat spring |
| 33420 | Spring—Tuning shaft cam spiral spring |
| 33426 | Switch—Range switch (S1, S2) |
| 33428 | Transformer—First i-f transformer (L9, L10, C19, C20) |
| 14308 | Transformer—Second i-f transformer (L11, L12, C21, C22, C23, R5) |
| 33618 | Transformer—Power transformer—105-120 volts, 25 cycle (T1) |
| 33112 | Transformer—Power transformer—105-120 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (RL-70H6)** |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L13) |
| 33116 | Coil—Speaker field coil (L15) |
| 31275 | Cone—Speaker cone, voice coil and dust cap (L14) |
| 5118 | Plug—3-contact male, for speaker |
| 31301 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33474 | Button—Push button |
| 33437 | Dial—Dial scale (glass) |
| 33439 | Escutcheon—Dial escutcheon—less push buttons |
| 33436 | Frame—Dial scale holder, mounting brackets, and pointer assembled—less dial |
| 34383 | Indicator—Dial pointer, carriage and clip |
| 33434 | Knob—Volume control, tone control, range switch, or station selector knob |
| 33431 | Link—Link for "Antenna-Ground" terminal board |
| 33842 | Marker—Station selectors call letter markers |
| 34143 | Shaft—Pointer carriage slide rod |
| 14270 | Spring—Retaining spring for knob |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 35014 | Mounting — Rubber cushion, spacer and washers for chassis mounting (4 required) |
| 14439 | Resistor—100 ohms, ½ watt (R12) |
| 34969 | Washer—For under control knobs |

## Replacement Parts MODEL K-80, RC-415A

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-415A)** |
| 33620 | Arm—Push arm and cam assembly on tuning unit—less lock screw |
| 33432 | Arm—Trip arm and set screw located on range switch shaft |
| 33430 | Board—Antenna and ground terminal board |
| 30766 | Cap—Rubber cap for Magic Eye—Model K80 only |
| 12714 | Capacitor—Air-trimmer, 2-12 mmfd. (C10) |
| 33429 | Capacitor—Trimmer capacitor bank, 2 sections 4-50 mmfd., and 3 sections 2-20 mmfd. (C3, C5, C6, C9, C11) |
| 31871 | Capacitor—20 mmfd. (C2) |
| 12723 | Capacitor—56 mmfd. (C12) |
| 30904 | Capacitor—100 mmfd. (C19, C20) |
| 12404 | Capacitor—120 mmfd. (C21, C22) |
| 14712 | Capacitor—180 mmfd. (C23) |
| 30232 | Capacitor—220 mmfd. (C14) |
| 30608 | Capacitor—510 mmfd. (C1) |
| 31433 | Capacitor—560 mmfd. (C7) |
| 12537 | Capacitor—560 mmfd. (C32) |
| 31403 | Capacitor—3,300 mmfd. (C8) |
| 31405 | Capacitor—6,000 mmfd. (C13) |
| 4838 | Capacitor—.005 mfd. (C24, C26, C29, C33, C35) |
| 4937 | Capacitor—.01 mfd. (C28) |
| 32787 | Capacitor—.05 mfd., 400 V. (C17, C34) |
| 32786 | Capacitor—0.1 mfd. (C18) |
| 33014 | Capacitor—Electrolytic, 3 sections 10 mfd., one section 20 mfd. (C16, C27, C30, C31) |
| 32821 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil (L5, L6, L7) |
| 33424 | Control—Tone control (S3, S4) |
| 33425 | Control—Volume control and power switch (R6, S5) |
| 32635 | Cord—Condenser drive cord |
| 32634 | Cord—Drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 33627 | Drum—Condenser drive drum |
| 33174 | Drum—Drive cord drum with set screws and calibrator dial |
| 11891 | Lamp—Dial lamp |
| 33625 | Plate—Front guide plate for push arms |
| 5040 | Plug—4-contact female for speaker cable |
| 33427 | Pulley—Drive cord pulley and mounting bracket |
| 33626 | Pulley—Drive pulley—less bronze drive cord |
| 14439 | Resistor—100 ohms, ½ watt (R12) |
| 30735 | Resistor—560 ohms, 1 watt (R8) |
| 13714 | Resistor—5,600 ohms, ½ watt (R11) |
| 12265 | Resistor—6,800 ohms, ½ watt (R17) |
| 33489 | Resistor—15,000 ohms, 2.5 watt (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9, R10, R14, R16) |
| 12013 | Resistor—1 meg., 1/10 watt (R13) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R7, R15) |
| 30340 | Retainer—Retainer for shaft of tuning shaft cam and arm |
| 33419 | Roller—Friction roller for tuning knob shaft |
| 4669 | Screw—No. 8-32 square head set screw for drum |
| 33621 | Screw—Push arm lock screw |
| 33624 | Shaft—Tuning condenser drive shaft and washer |
| 33422 | Shaft—Tuning shaft—less friction roller |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye tube socket |
| 14278 | Socket—Phonograph or Television input socket |
| 31319 | Socket—Tube socket |
| 33175 | Spring—Drive cord tension spring |
| 33623 | Spring—Drive drum cord spring |
| 33622 | Spring—Push arm return spring |
| 33421 | Spring—Tuning shaft flat spring |
| 33420 | Spring—Tuning shaft cam spiral spring |
| 33426 | Switch—Range switch (S1, S2) |
| 33428 | Transformer—First i-f transformer (L9, L10, C19, C20) |
| 14308 | Transformer—Second i-f transformer (L11, L12, C21, C22, C23, R5) |
| 33618 | Transformer—Power transformer—105-120 volts, 25 cycle (T1) |
| 33112 | Transformer—Power transformer—105-120 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (RL-70J1)** |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L13) |
| 33116 | Coil—Speaker field coil (L15) |
| 31275 | Cone—Speaker cone, voice coil, and dust cap (L14) |
| 5039 | Plug—4-prong male, for speaker |
| 33444 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33473 | Button—Push button |
| 30716 | Clip—Magic Eye clip |
| 33437 | Dial—Dial scale (glass) |
| 33439 | Escutcheon—Dial escutcheon—less push buttons |
| 33435 | Frame—Dial scale holder, mounting brackets, pointer, and Magic Eye bracket and clip assembled—less dial |
| 34383 | Indicator—Dial pointer, carriage, and clip |
| 33434 | Knob—Volume control, tone control, range switch, or station selector knob |
| 33431 | Link—Link for "Antenna-Ground" terminal board |
| 33842 | Marker—Station selectors call letter markers |
| 33438 | Screw—Thumb screw for Magic Eye clip |
| 34143 | Shaft—Pointer carriage slide rod |
| 14270 | Spring—Retaining spring for knob |

**Additional Replacement Parts:**

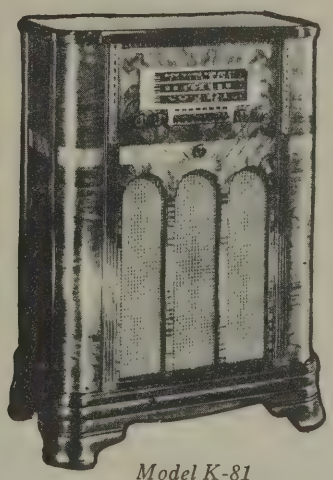
| Stock No. | |
|---|---|
| 35014 | Mounting for chassis, rubber cushion, spacer and washers (4 required) |
| 36078 | Drive—Tuning knob drive assembly |
| 34969 | Washer—Felt washer for under control knobs |

# MODELS K-60, K-62 K-80, K-81 and K-82

Chassis No. RC-415B, RC-415C, RC-415D, RC-415C RC-415C

## Three-Band, A-C, Loop, Superheterodynes

*Model K-62 (RC-415B)*



*Model K-81*

*Model K-82 (RC-415C).*

## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,560 kc |
| Medium Wave | 1.52-4.0 mc |
| Short Wave | 5.8-18.0 mc |
| INTERMEDIATE FREQUENCY | 455 kc |

### MODEL K-60 (RC-415B) K-62

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SA7 | 1st Detector-Oscillator |
| (2) RCA-6K7 | I-F Amplifier |
| (3) RCA-6H6 | 2nd Detector, A.V.C. |
| (4) RCA-6SF5 | A-F Amplifier |
| (5) RCA-6F6-G | Power Output |
| (6) RCA-5Y3-G | Rectifier |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 2.5 watts |
| Maximum | 4.5 watts |

LOUDSPEAKER (RL-70H-6)

| | |
|---|---|
| Type | 12-inch electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

POWER CONSUMPTION

| | |
|---|---|
| Watts | 75 |

### MODELS K-80, K-81, K-82

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SA7 | 1st Detector-Oscillator |
| (2) RCA-6K7 | I-F Amplifier |
| (3) RCA-6SQ7 | 2nd Detector, A.V.C., and A-F Amplifier |
| (4) RCA-6SF5 | Inverter |
| (5) RCA-6F6-G | Power Output |
| (6) RCA-6F6-G | Power Output |
| (7) RCA-5Y3-G | Rectifier |
| RCA-6U5/6G5 | Tuning Indicator |
| PILOT LAMPS (2) | Mazda No. 44, 6.3 volts, 0.25 amp. |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 5.0 watts |
| Maximum | 5.5 watts |

LOUDSPEAKER (RL-70J-1)

| | |
|---|---|
| Type | 12-inch electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

POWER CONSUMPTION

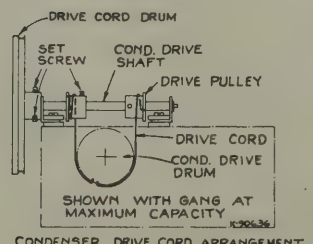
| | |
|---|---|
| Watts | 85 |

## Push Button Adjustment

The push-buttons should be adjusted for eight favorite stations after the receiver is operating, and has had a brief warm-up period.

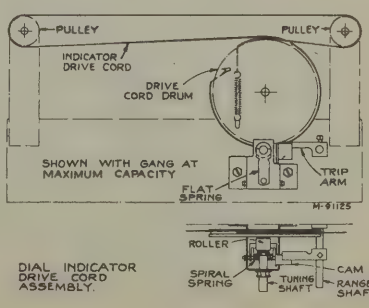
Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-button screws in back of the station-marker recesses.
2. Set Accessory-Tone Knob to "Radio" and turn the range selector to "A."
3. Press in the tuning knob and accurately tune in the first station.
4. With station accurately tuned in, press in the first push-button and tighten the screw.
5. Place the station marker tab in the recess.
6. Proceed in a similar manner to adjust the remainder of the push-buttons.




CONDENSER DRIVE CORD ARRANGEMENT

**Note:** In the Dial Indicator Drive Cord Assembly drawing the mechanism is shown with the **range switch in the "A" band position.** In this position the trip arm on the range shaft must be adjusted so that when the push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.




DIAL INDICATOR DRIVE CORD ASSEMBLY.

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

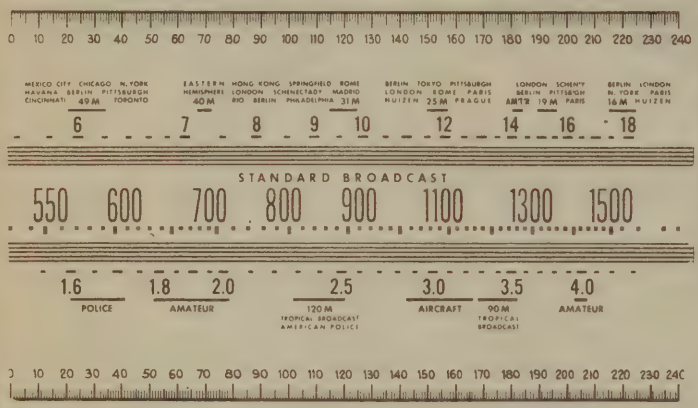
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord-Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference when the chassis is removed; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical and directly under the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

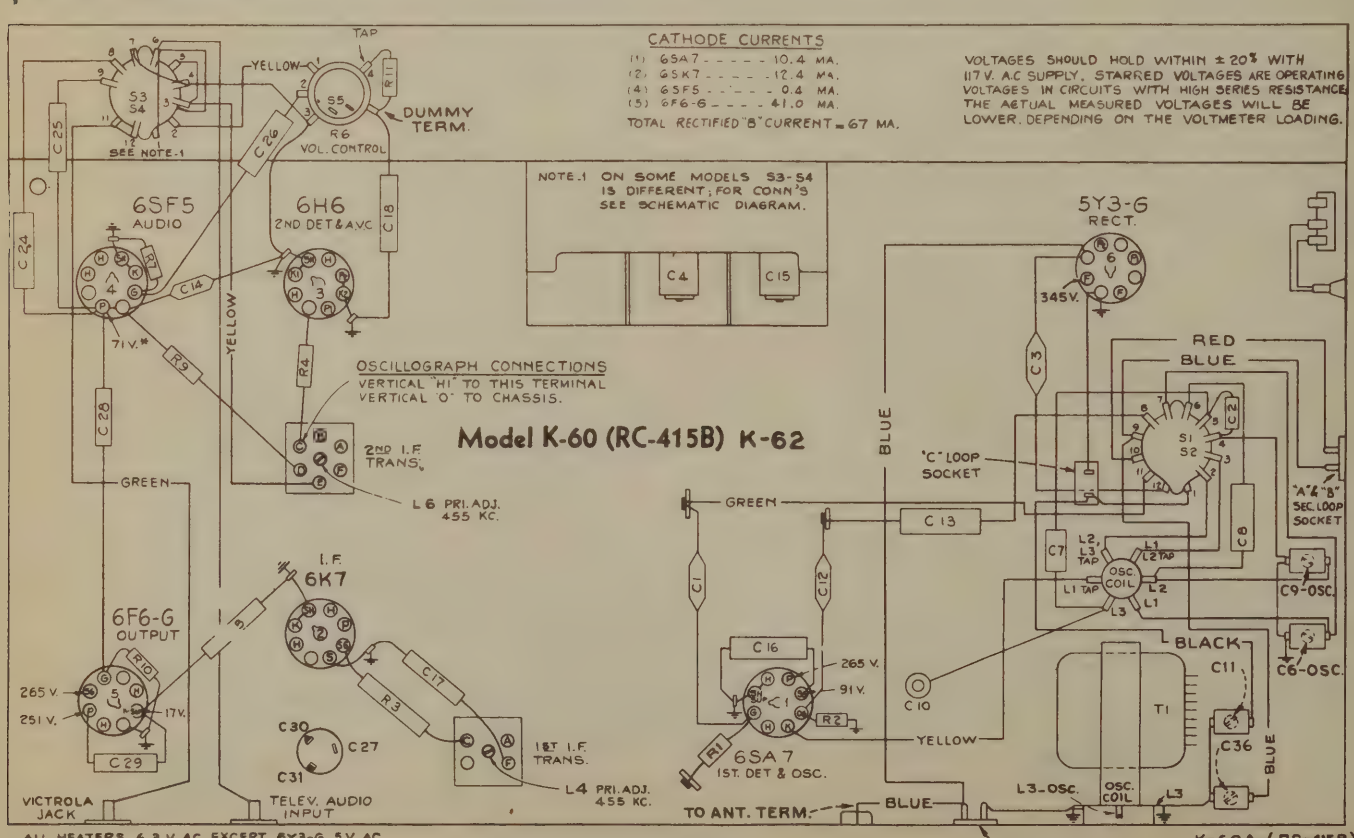
On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

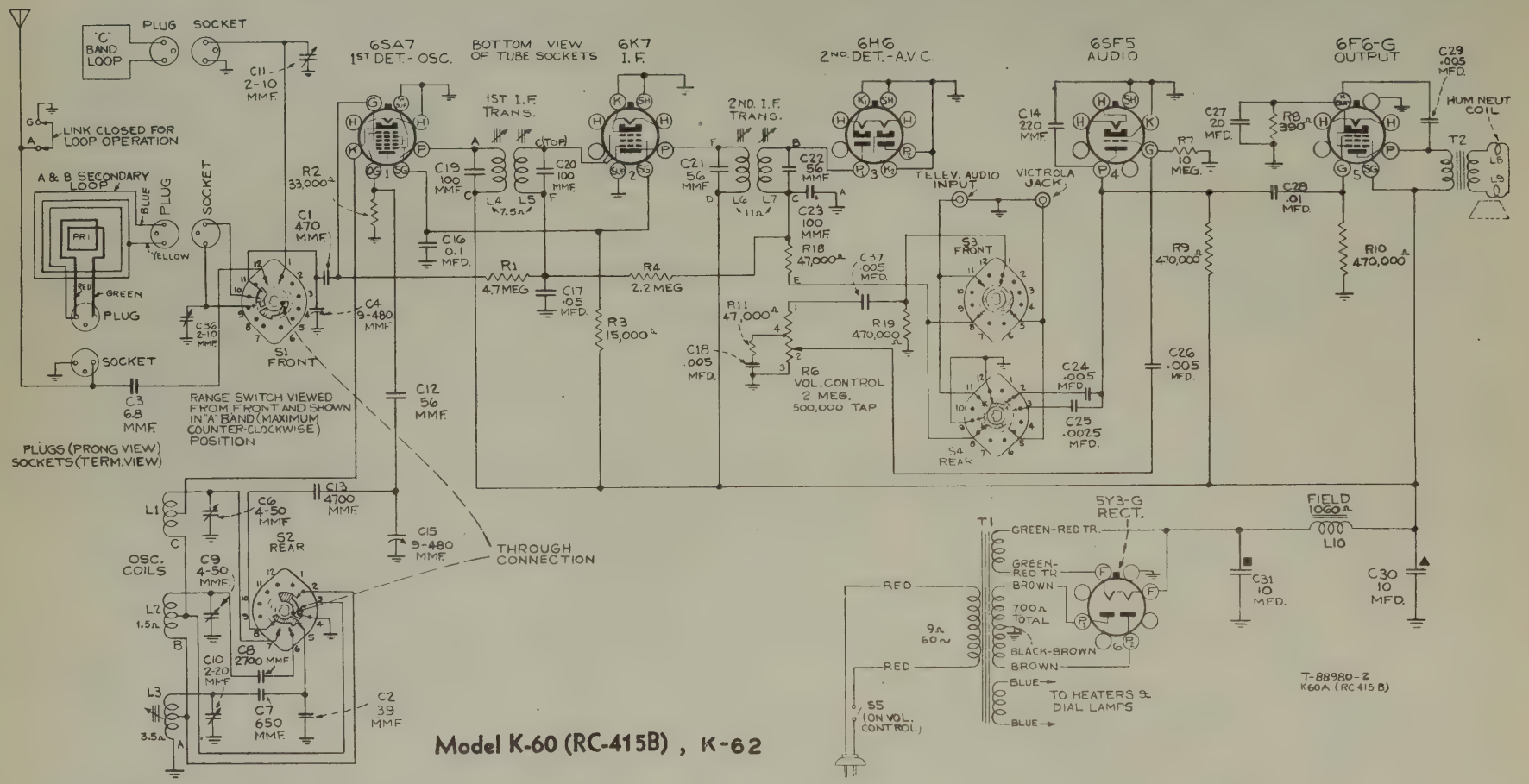

STANDARD BROADCAST
550 600 700 800 900 1100 1300 1500
6 7 8 9 10 12 14 16 18
1.6 1.8 2.0 2.5 3.0 3.5 4.0
POLICE
AMATEUR
120 M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90 M TROPICAL BROADCAST
AMATEUR

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

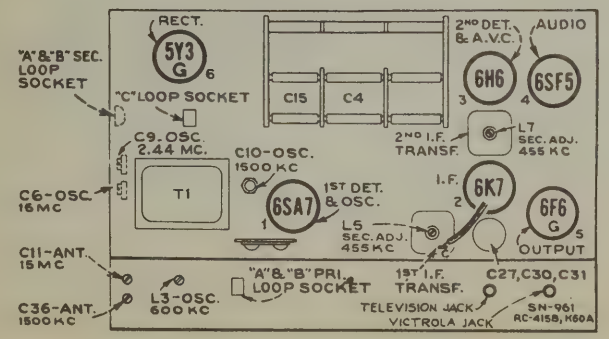
| Steps | Connect test-osc. output to— | Tune test-osc. to— | Turn radio dial to | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 1st-det. grid, in series with .01 mfd. | 455 kc | "C" band quiet point | L6 and L7 (2nd I-F trans.) L4 and L5 (1st I-F trans.) |
| 2 | | 15 mc | 191° "C" band | C8 (osc.)* |
| 3 | | 2.44 mc | 115° "B" band | C9 (osc.) |
| 4 | Fasten chassis in cabinet, see that link is closed on the antenna board, attach dial indicator to drive cord, with indicator at 530 kc mark and gang at maximum capacity. | | | |
| 5 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 15 mc | 15 mc signal "C" band | C11 Rock gang |
| 6 | | 6.0 mc | 6.0 mc signal "C" band | "C" loop leads** |
| 7 | | Repeat step 5 | | |
| 8 | | 600 kc | 600 kc "A" band | L3 (osc.) Rock gang |
| 9 | | 1,500 kc | 1,500 kc "A" band | C10 (osc.) C36 (loop) |
| 10 | | Repeat steps 8 and 9 | | |
| 11 | | 2.44 mc | 2.44 kc "B" band | C9 (osc.) Rock gang |

* Use minimum capacity peak if two peaks can be obtained.
** Adjust spacing between two leads from "C" band loop.
**NOTE:** Oscillator tracks above signal on all bands.


CATHODE CURRENTS
(1) 6SA7 - - - - - 10.4 MA.
(2) 6SK7 - - - - - 12.4 MA.
(4) 6SF5 - - - - - 0.4 MA.
(5) 6F6-G - - - - 41.0 MA.
TOTAL RECTIFIED "B" CURRENT = 67 MA.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C SUPPLY. STARRED VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE. THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
NOTE 1 ON SOME MODELS S3-S4 IS DIFFERENT; FOR CONN'S SEE SCHEMATIC DIAGRAM.
Model K-60 (RC-415B) K-62
6SF5 AUDIO
6H6 2ND DET & AVC
6F6-G OUTPUT
6K7 I.F.
6SA7 1ST. DET & OSC.
5Y3-G RECT.
DUMMY TERM.
R6 VOL. CONTROL
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS.
2ND I.F. TRANS.
L6 PRI. ADJ. 455 KC.
1ST I.F. TRANS.
L4 PRI. ADJ. 455 KC.
"C" LOOP SOCKET
"A" & "B" SEC. LOOP SOCKET
"A" & "B" PRI. LOOP SOCKET
C9-OSC.
C6-OSC.
C11
C36
L3-OSC.
OSC. COIL
T1
TO ANT. TERM.
VICTROLA JACK
TELEV. AUDIO INPUT
YELLOW
GREEN
BLUE
RED
BLACK
345 V.
265 V.
251 V.
91 V.
71 V.*
17 V.
ALL HEATERS 6.3 V. AC, EXCEPT 5Y3-G, 5 V. AC.
BOTTOM VIEW - REAR OF CHASSIS
R-F WIRING & SOCKET VOLTAGES
K-60A (RC-415B)
SN-1004




## Model K-60 (RC-415B), K-62

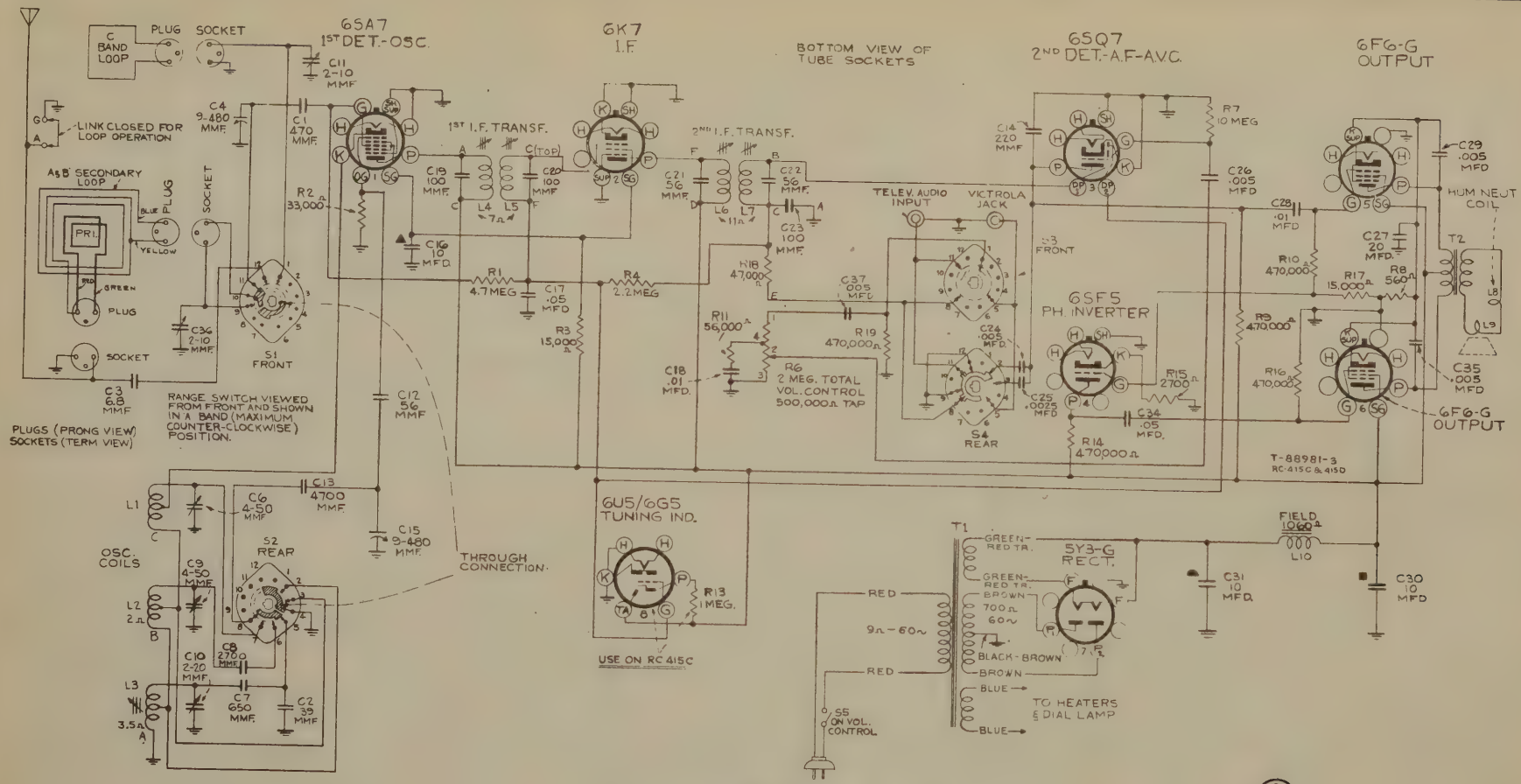



**Oscillation or Instability:**

Tendency of loop receivers (K-60, K-80) to oscillate, or the presence of excessive regeneration, may be caused by improper I-F alignment. To correct, re-align the chassis for "symmetrical" wave shape as shown on an oscillograph, rather than for maximum peak output.

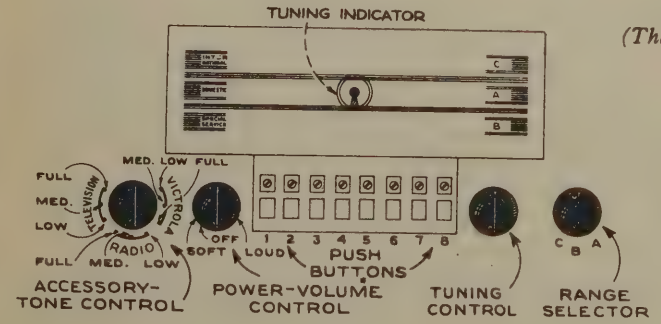
**Improved Reception on "C" Band:**

Connecting an antenna directly to "C" band loop, 2 or 3 inches from the low-end of the loop, provides a step-up transformer action and gives noticeable improvement on short-wave reception. A 1,000-mmfd. capacitor should be connected in series with the antenna.




## Models K-80 and K-81, K-82

*(The Tuning Indicator is not used in RC-415D)*

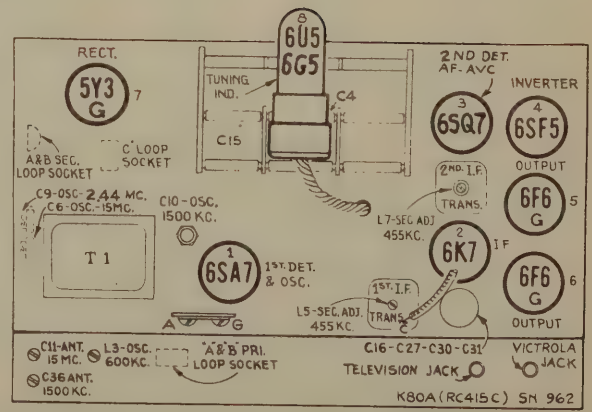


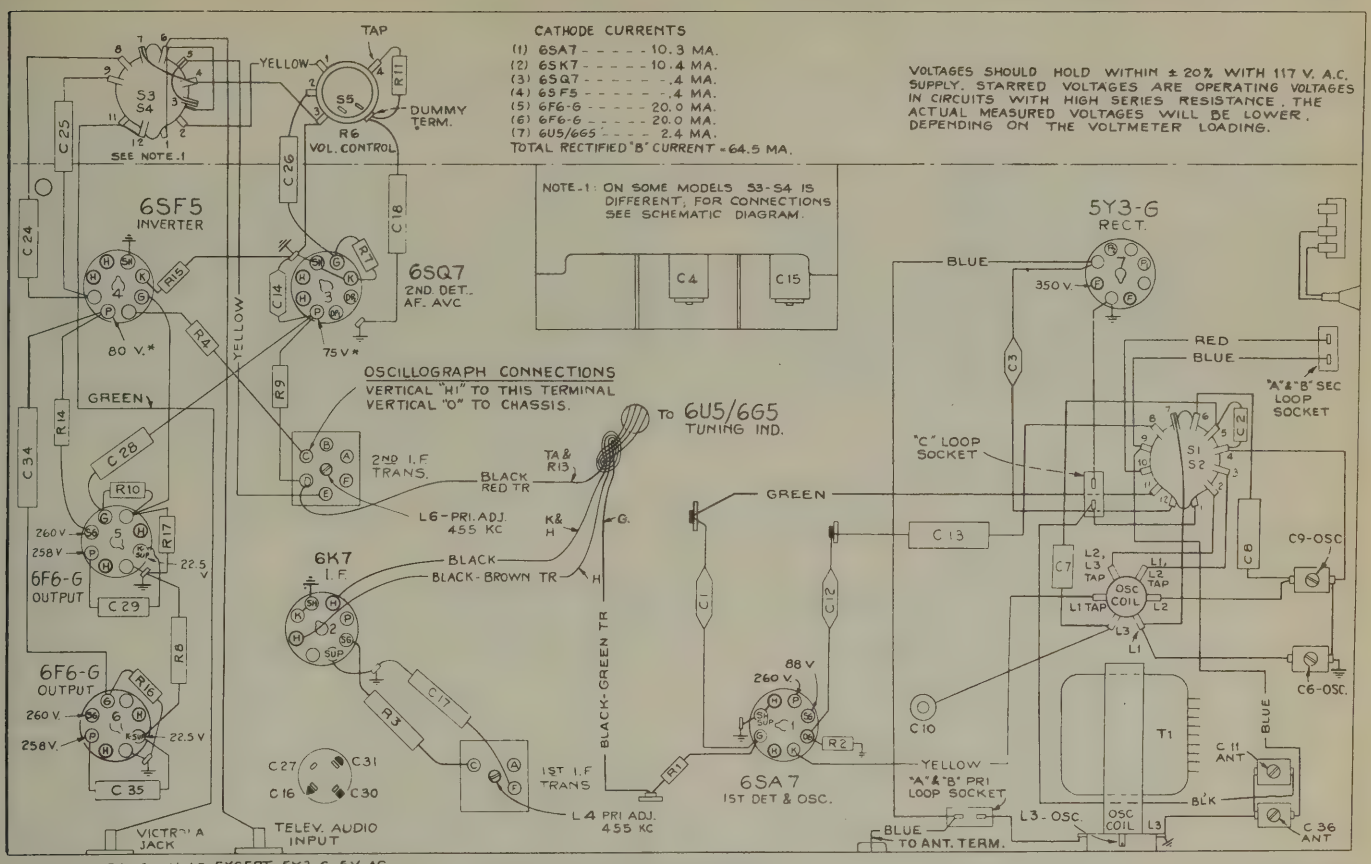

### Hum Modulation and Howl:

Tendency of occasional receivers towards hum modulation and howl may be alleviated by:

(a) Rubber-mounting the loudspeaker by means of rubber grommets (Stock No. 33774).

(b) "Rigid-izing" loop antenna by taping winding in six places (2 each side, 1 top, and 1 bottom), using cellulose tape.




CATHODE CURRENTS
(1) 6SA7 - - - - - 10.3 MA.
(2) 6SK7 - - - - - 10.4 MA.
(3) 6SQ7 - - - - - .4 MA.
(4) 6SF5 - - - - - .4 MA.
(5) 6F6-G - - - - - 20.0 MA.
(6) 6F6-G - - - - - 20.0 MA.
(7) 6U5/6G5 - - - - 2.4 MA.
TOTAL RECTIFIED "B" CURRENT = 64.5 MA.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY. STARRED VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE. THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
NOTE-1: ON SOME MODELS S3-S4 IS DIFFERENT, FOR CONNECTIONS SEE SCHEMATIC DIAGRAM.
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS.
6SF5 INVERTER
6SQ7 2ND. DET. AF. AVC
6K7 I.F.
6F6-G OUTPUT
6F6-G OUTPUT
6SA7 1ST DET & OSC.
5Y3-G RECT.
TAP
DUMMY TERM.
R6 VOL. CONTROL
SEE NOTE-1
80 V.*
75 V.*
2ND I.F. TRANS.
1ST I.F. TRANS.
TO 6U5/6G5 TUNING IND.
L6-PRI. ADJ. 455 KC
L4 PRI ADJ. 455 KC
"C" LOOP SOCKET
"A" & "B" SEC LOOP SOCKET
"A" & "B" PRI LOOP SOCKET
C9-OSC.
C6-OSC.
C11 ANT
C36 ANT
L3-OSC.
BLUE TO ANT. TERM.
VICTROLA JACK
TELEV. AUDIO INPUT
ALL HEATERS 6.2 V. AC, EXCEPT 5Y3-G, 5 V. AC.

BOTTOM VIEW - REAR OF CHASSIS

R-F WIRING & SOCKET VOLTAGES

SM-1002
RC-415C-K80A

## Models K-80 (RC-415C, RC-415D), and K-81 (RC-415C), K-82

** The Tuning Indicator is not used in RC-415D*

### MODEL K-62, RC-415B

**Technical Information and Service Data:**

Refer to Service Data for loop-type K-60 (RC-415B), and the following parts used in K-62:

**Stock No.**

32068 Transformer—1st i-f transformer....

MISCELLANEOUS ASSEMBLIES

34994 Button—Push button.....
34285 Clip—Tuning indicator clip.....
35387 Decalcomania — "Power-Volume" decal.....
35392 Decalcomania—"RCA Victor" decal..
35454 Decalcomania—"Range" decal.....
35453 Decalcomania—"Television-Radio-Victrola" decal.....
35391 Decalcomania—"Tuning" decal.....
34997 Dial—Glass dial scale.....
35561 Escutcheon—Dial scale and push button escutcheon, less scale and buttons .....
35683 Frame—Dial frame complete, less dial, pointer and pointer rods.....
34789 Frame—Frame only for "C" band loop .....
34383 Indicator—Station selector indicator and carriage.....
34998 Knob—Tuning, volume control, tone control or range switch knob.....
35931 Loop—Antenna loop for "A" and "B" bands.....
33842 Marker—Station selector marker....
34872 Pin—Complete set of dowel pins for antenna loop.....
34990 Plug—2-prong male plug for "C" band loop.....
32641 Plug—3-prong male plug for antenna loop for "A" and "B" bands.....
33550 Screen—Push button "A Band" marker screen.....
34491 Shaft—Pointer carriage guide rod...
14270 Spring—Retaining spring for knob, Stock No. 34998.....

### MODELS K-60, K-80

**Additional Replacement Parts:**

(In RC-415B, 415C. and 415D.)

**Stock No.**

36078 Drive—Tuning knob drive assembly.
33436 Frame—Dial scale holder, mounting brackets, and pointer, assembled, less dial (RC-415B and 415D)...
33435 Frame—Dial scale holder, mounting brackets, pointer, and "Magic Eye" bracket and clip, assembled, less dial (K-80, RC-415C).....
11765 Lamp—Dial lamp.....
35014 Mounting — Rubber cushion, spacer, and washers, for mounting chassis (4 required) .....

### MODEL K-82, RC-415C

**Technical Information and Service Data:**

Refer to Service Data for loop-type K-80, which uses the same chassis (RC-415C).

Replacement parts for Model K-82 are listed below:

**Stock No.**

32068 Transformer—First I-F transformer.

MISCELLANEOUS ASSEMBLIES

34994 Button—Push button.....
34285 Clip—Tuning indicator clip.....
35387 Decalcomania—"Power-Volume" decal
35454 Decalcomania—"Range" decal.....
35392 Decalcomania—"RCA Victor" decal.
35453 Decalcomania—"Television-Radio-Victrola" decal.....
35391 Decalcomania—"Tuning" decal.....
34997 Dial—Glass dial scale.....
35561 Escutcheon—Dial scale and push button escutcheon—less scale and buttons .....
35683 Frame—Dial frame complete — less dial, pointer and pointer rods:....
34789 Frame—Frame only for "C" band loop .....
34383 Indicator—Station selector indicator and carriage.....
34998 Knob—Tuning, volume control, tone control or range switch knob.....
35933 Loop—Antenna loop complete.....
33842 Marker—Station selector marker....
34872 Pin—Complete set of dowel pins for antenna loop.....
34990 Plug—2-prong male plug for "C" band loop.....
32641 Plug—3-prong male plug for antenna loop for "A" and "B" bands.....
33550 Screen—Push button "A band" marker screen .....
34491 Shaft—Pointer carriage guide rod...
14270 Spring—Retaining spring for knob, Stock No. 34998.....

# MODELS K-60, K-80 & K-81

## Replacement Parts

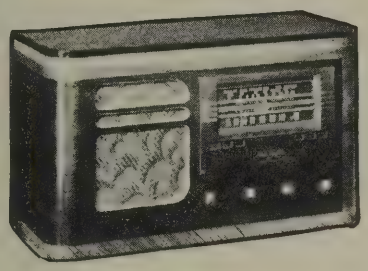
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 33620 | Arm—Push arm and cam assembly on tuning unit —less lock screw |
| 33432 | Arm—Trip arm and set screw located on range switch shaft |
| 34574 | Board—"Ant.-Grd." terminal board |
| 12581 | Cap—i-f transformer shield cap |
| 30766 | Cap—Rubber cap for Magic Eye — Models K-80, K-81 |
| 34573 | Capacitor—Trimmer, 2 sections 2-10 mmfd. each |
| 34572 | Capacitor—Trimmer, 2 sections 4-50 mmfd. each |
| 12714 | Capacitor—Air-trimmer, 2-12 mmfd. (C10) |
| 14079 | Capacitor—6.8 mmfd. (C3) |
| 34580 | Capacitor—39 mmfd. (C2) |
| 12723 | Capacitor—56 mmfd. (C12) |
| 30949 | Capacitor—56 mmfd. (C21, C22) |
| 30904 | Capacitor—100 mmfd. (C19, C20) |
| 30232 | Capacitor—220 mmfd. (C14) |
| 30433 | Capacitor—470 mmfd. (C1) |
| 34581 | Capacitor—650 mmfd. (C7) |
| 30057 | Capacitor—2,700 mmfd. (C8) |
| 31399 | Capacitor—4,700 mmfd. (C13) |
| 5107 | Capacitor—.0025 mfd. (C25) |
| 33584 | Capacitor—.005 mfd. (C18—Model K-60 only), (C35 — Models K-80, K-81), (C37 — All Models) |
| 4838 | Capacitor—.005 mfd. (C24, C26, C29) |
| 4937 | Capacitor—.01 mfd. (C18—Models K-80, K-81), (C28—All Models) |
| 32787 | Capacitor—.05 mfd. (C34—Models K-80, K-81), (C17—All Models) |
| 4839 | Capacitor—0.1 mfd. (C16) (Model K-60 only) |
| 32786 | Capacitor—0.1 mfd. |
| 32240 | Capacitor—Electrolytic, 2 sections 10 mfd., one section 20 mfd. (C27, C30, C31) (Model K-60 only) |
| 33014 | Capacitor—Electrolytic, 3 sections 10 mfd., one section 20 mfd. (C16, C27, C30, C31) (K-80, K-81) |
| 34579 | Coil—Oscillator coil |
| 34578 | Control—Tone control |
| 34695 | Control—Volume control and power switch |
| 32635 | Cord—Condenser drive cord |
| 32634 | Cord—Drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 33627 | Drum—Condenser drive drum |
| 33174 | Drum—Drive cord drum with set screws and calibrator dial |
| 33625 | Plate—Front guide plate for push arms |
| 5119 | Plug—3-contact female for speaker cable (Model K-60-A only) |
| 5040 | Plug—4-contact female for speaker cable (Models K-80, K-81) |
| 33427 | Pulley—Drive cord pulley and mounting bracket |
| 33626 | Pulley—Drive pulley—less bronze drive cord |
| 31388 | Resistor—390 ohms, 1 watt (R8) (Model K-60 only) |
| 30735 | Resistor—560 ohms, 1 watt (R8) (Models K-80, K-81) |
| 14024 | Resistor—2,700 ohms, ½ watt (R11, R15) (Models K-80, K-81) |
| 12695 | Resistor—15,000 ohms, ½ watt (R17) (Models K-80, K-81) |
| 33489 | Resistor—15,000 ohms, 2.5 watt (R3) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 5132 | Resistor—47,000 ohms, 1/10 watt |
| 12412 | Resistor—47,000 ohms, ½ watt (R11) (Model K-60 only) |
| 12286 | Resistor—56,000 ohms, ½ watt (R11) (Models K-80, K-81) |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12013 | Resistor—1 meg., 1/10 watt (R13) (Models K-80, K-81) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 30271 | Resistor—4.7 meg., ½ watt (R1) |
| 13601 | Resistor—10 meg., ½ watt (R7) |
| 30340 | Retainer—Retainer for shaft of tuning shaft cam and arm |
| 33419 | Roller—Friction roller for tuning knob shaft |
| 4669 | Screw—No. 8-32 square head set screw for drum |
| 33621 | Screw—Push arm lock screw |
| 33624 | Shaft—Tuning condenser drive shaft and washer |
| 33422 | Shaft—Tuning shaft—less friction roller |
| 34575 | Socket—3-contact female, for loop input |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye tube socket (Models K-80, K-81) |
| 14278 | Socket—Phonograph or Television input socket |
| 31319 | Socket—Tube socket |
| 33175 | Spring—Drive cord tension spring |
| 33623 | Spring—Drive drum cord spring |
| 33622 | Spring—Push arm return spring |
| 33421 | Spring—Tuning shaft flat spring |
| 33420 | Spring—Tuning shaft cam spiral spring |
| 34577 | Switch—Range switch |
| 14376 | Transformer—First i-f transformer |
| 32825 | Transformer—Second i-f transformer |
| 33618 | Transformer—Power transformer—105-120 volts, 25-60 cycle (T1) |
| 33112 | Transformer—Power transformer—105-120 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (K-60) (RL-70H6)** |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil |
| 33116 | Coil—Speaker field coil |
| 31275 | Cone—Speaker cone, voice coil and dust cap |
| 5118 | Plug—3-contact male, for speaker |
| 31301 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES (K-80, K-81, (RL-70J1)** |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil |
| 33116 | Coil—Speaker field coil |
| 31275 | Cone—Speaker cone, voice coil and dust cap |
| 5039 | Plug—4 prong male, for speaker |
| 33444 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33474 | Button—Push button (K-60, K-80) |
| 34994 | Button—Push button (K-81) |
| 34992 | Cap—Spindle cap for antenna loop (K-81) |
| 30716 | Clip—Magic Eye clip K-80) |
| 34582 | Dial—Dial scale (glass) (K-60, K-80) |
| 34997 | Dial—Dial scale (glass) (K-81) |
| 33439 | Escutcheon—Dial escutcheon—less push buttons (K-60, K-80) |
| 34993 | Escutcheon—Dial scale and push button escutcheon (K-81) |
| 34996 | Frame—Dial frame complete with brackets—*less* pointer guide rods, pointer and carriage, dial scale and Magic Eye clip (K-81) |
| 34583 | Frame—Frame only for "C" band loop—less wire and plug |
| 34383 | Indicator—Dial pointer, carriage, and clip |
| 34998 | Knob—Tuning, tone control, range switch, volume control and power switch or antenna loop shaft knob (K-81) |
| 33434 | Knob—Volume control, tone control, range switch or station selector knob (K-60, K-80) |
| 34988 | Loop—"A" and "B" band loop complete for K-60 |
| 34991 | Loop—"A" and "B" band antenna loop complete (K-81) |
| 33842 | Marker—Station selector markers |
| 34872 | Pin—Complete set of dowel pins for antenna loop (K-60, K-80) |
| 34990 | Plug—2-prong male plug for antenna loop—"C" band (K-81) |
| 32641 | Plug—3-prong male plug for "A" and "B" band antenna loop |
| 31482 | Screw—No. 8-32 square head set screw (K-81) |
| 33438 | Screw—Thumb screw for Magic Eye clip (K-60, K-80) |
| 34995 | Shaft—Flexible shaft for antenna loop (K-81) |
| 34491 | Shaft—Pointer and carriage guide rods (K-81) |
| 14270 | Spring—Retaining spring for knob |

# MODELS T-60 and T-62

## Chassis No. RC-425 RC-425D

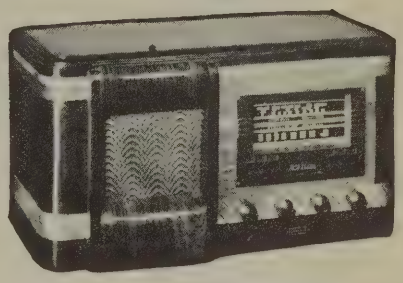
## Six-Tube, Two-Band, AC, Superheterodyne Receivers



*Model T-60*

### Power Line Antenna

Each of these models is equipped with a built-in power line antenna. To use this antenna, the link on the antenna terminal board should be connected between "A" and "L", thus connecting the antenna input of the receiver through a capacitor to the powerline. If an outside antenna is used, it should be connected to "A", a ground connection made to "G", and the link removed.



*Model T-62*

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,720 kc |
| Short Wave | 5.6-20 mc |
| INTERMEDIATE FREQUENCY | 455 kc |

TUBE COMPLEMENT

| | | |
|---|---|---|
| (1) | RCA-6SA7 | 1st. Detector-Oscillator |
| (2) | RCA-6SK7 | I-F Amplifier |
| (3) | RCA-6SQ7. | 2nd. Detector, A.V.C., and A-F Amplifier |
| (4) | RCA-6F6-G | Power Output |
| (5) | RCA-6U5/6G5 | Tuning Indicator |
| (6) | RCA-5Y3-G | Rectifier |

PILOT LAMP (1) .....Mazda No. 51, 6.3 volts, 0.20 amp.

POWER OUTPUT RATING

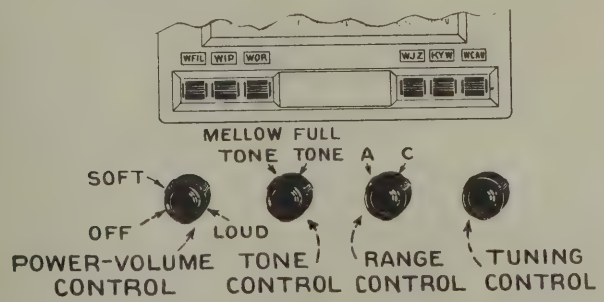
| | |
|---|---|
| Undistorted | 2.2 watts |
| Maximum | 4.2 watts |

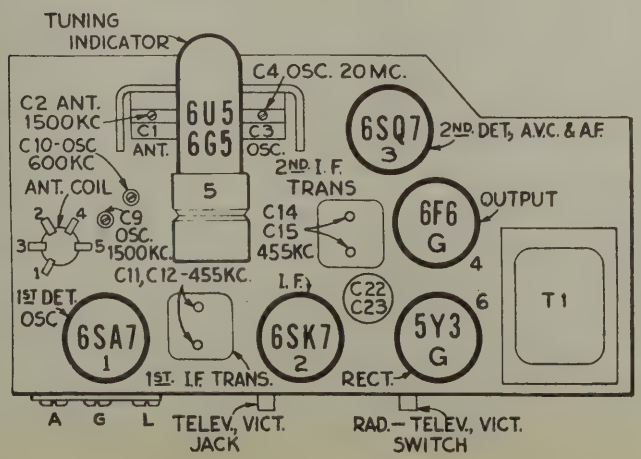
LOUDSPEAKER (T-60, RL-78-6; T-62, RL-79A-4)

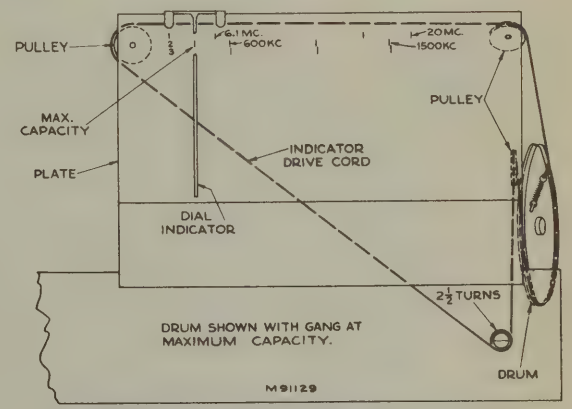
| | |
|---|---|
| Type | T-60, 5-inch electrodynamic; T-62, 6-inch electrodynamic. |
| V. C. Impedance | 3.4 ohms at 400 cycles |

POWER SUPPLY RATINGS

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 80 watts |
| Rating B | 105-125 volts, 25-60 cycles, 80 watts |
| Rating C | 100-130, 140-160, 195-250 volts, 40-60 cycles, 80 watts |



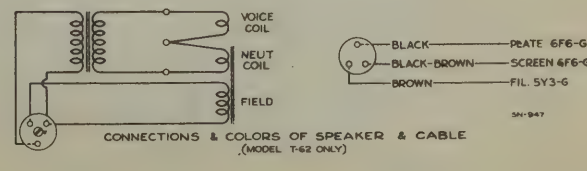



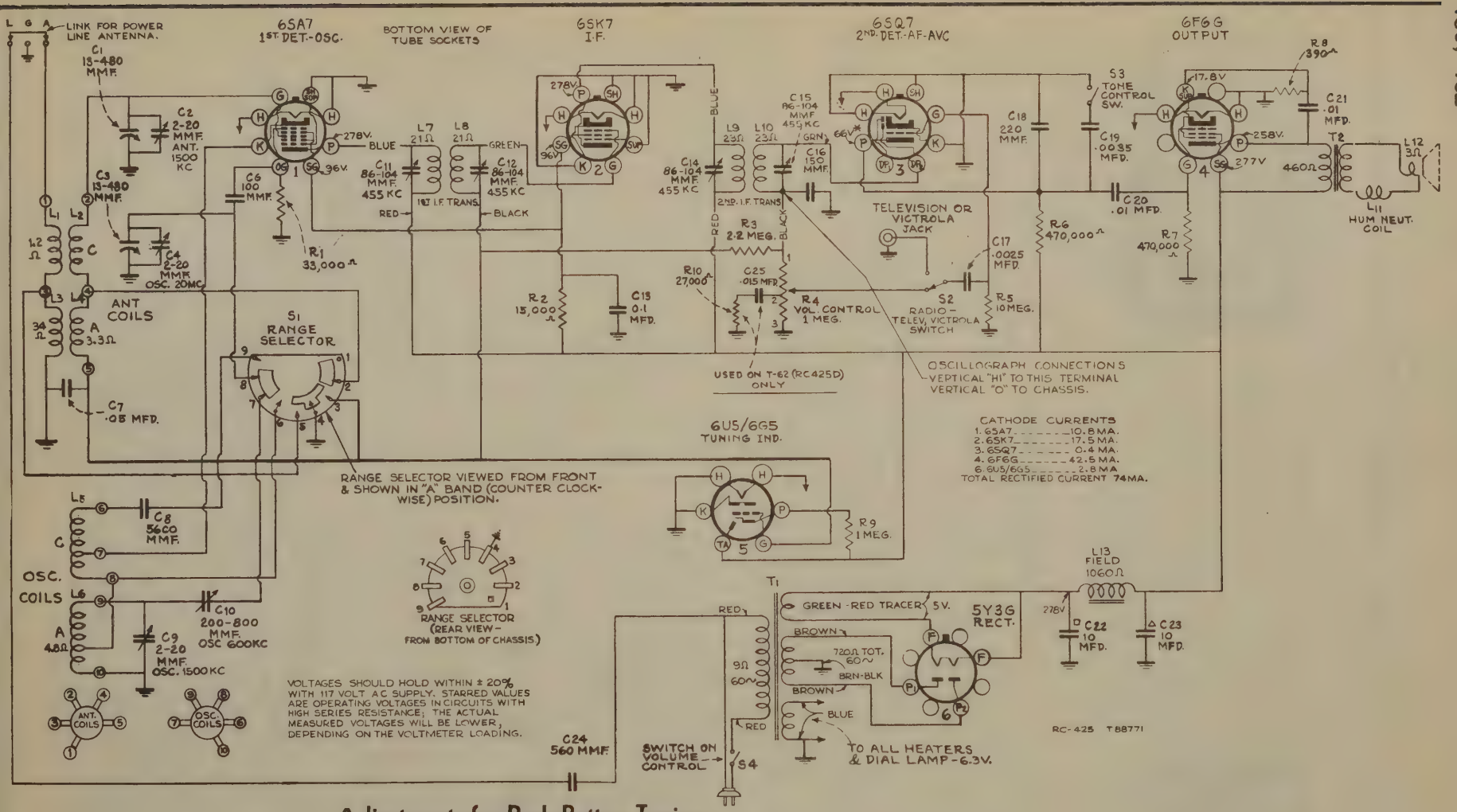

DIAL MECHANISM AND CALIBRATION MARKS.

**Precautionary Lead Dress.—**

1. Dress the Power Line Antenna lead close to the chassis base and near the back flange.
2. Power switch leads should be dressed around the 6SQ7 socket.




CONNECTIONS & COLORS OF SPEAKER & CABLE (MODEL T-62 ONLY)


LINK FOR POWER LINE ANTENNA.
6SA7 1ST DET.-OSC.
BOTTOM VIEW OF TUBE SOCKETS
6SK7 I.F.
6SQ7 2ND DET.-AF-AVC
6F6G OUTPUT
C1 13-480 MMF.
C2 2-20 MMF. ANT. 1500 KC
C3 13-480 MMF.
C4 2-20 MMF. OSC. 20MC
C6 100 MMF.
R1 33,000Ω
C11 86-104 MMF. 455 KC
C12 86-104 MMF. 455 KC
L7 21Ω
L8 21Ω
1ST I.F. TRANS.
C14 86-104 MMF. 455 KC
C15 86-104 MMF. 455 KC
L9 23Ω
L10 23Ω
2ND. I.F. TRANS.
C16 150 MMF.
R3 2.2 MEG.
R2 15,000Ω
C13 0.1 MFD.
R10 27,000Ω
C25 .015 MFD.
R4 VOL. CONTROL 1 MEG.
S2 RADIO - TELEV. VICTROLA SWITCH
R5 10 MEG.
TELEVISION OR VICTROLA JACK
C17 .0025 MFD.
C18 220 MMF.
R6 470,000Ω
R7 470,000Ω
S3 TONE CONTROL SW.
C19 .0035 MFD.
C20 .01 MFD.
R8 390Ω
C21 .01 MFD.
T2
L12 3Ω
L11 HUM NEUT. COIL
460Ω
ANT COILS
S1 RANGE SELECTOR
C7 .05 MFD.
C8 560 MMF.
OSC. COILS
C10 200-800 MMF. OSC 600KC
C9 2-20 MMF. OSC. 1500 KC
RANGE SELECTOR VIEWED FROM FRONT & SHOWN IN "A" BAND (COUNTER CLOCK-WISE) POSITION.
RANGE SELECTOR (REAR VIEW - FROM BOTTOM OF CHASSIS)
6U5/6G5 TUNING IND.
R9 1 MEG.
USED ON T-62 (RC425D) ONLY
OSCILLOGRAPH CONNECTIONS
VERTICAL "HI" TO THIS TERMINAL
VERTICAL "O" TO CHASSIS.
CATHODE CURRENTS
1. 6SA7 - - - - - - - 10.8 MA.
2. 6SK7 - - - - - - - 17.5 MA.
3. 6SQ7 - - - - - - - 0.4 MA.
4. 6F6G - - - - - - - 42.5 MA.
5. 6U5/6G5 - - - - - 2.8 MA.
TOTAL RECTIFIED CURRENT 74 MA.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 VOLT A.C SUPPLY. STARRED VALUES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
C24 560 MMF.
T1
GREEN - RED TRACER 5V.
BROWN
720Ω TOT. 60~
BRN-BLK
BROWN
BLUE
RED
9Ω 60~
5Y3G RECT.
L13 FIELD 1060Ω
C22 10 MFD.
C23 10 MFD.
SWITCH ON VOLUME CONTROL
S4
TO ALL HEATERS & DIAL LAMP - 6.3V.
RC-425 T88771

## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Turn the accessory switch on the back apron of the chassis to "Radio" position and accurately tune in the station for which the first button is to be set.

3. Press in the first push-button rod (left) with the screwdriver, as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than 1/4 turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

6. Insert the station marker tabs in the recesses above the push-buttons.

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid A.V.C. action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, 6.1 mc, and 20 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point to the mark at the extreme left (low frequency) end of the dial scale.

| Steps | Connect the high side of the test osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Antenna terminal | 455 kc | "A" Band Quiet point between 550-750 kc | C14 and C15 (2nd I-F trans.) |
| 2 | | | | C11 and C12 (1st I-F trans.) |
| 3 | Antenna terminal in series with 300 ohms | 20 mc | "C" Band 20 mc calibration mark | C4 (osc.)* |
| 4 | Antenna terminal in series with 200 mmf. | 1,500 kc | "A" Band 1,500 kc calibration mark | C9 (osc.) C2 (ant.) |
| 5 | | 600 kc | "A" Band 600 kc calibration mark | C10 (osc.) Rock gang |
| 6 | Repeat step 4 | | | |

* Use **minimum** peak if two can be obtained. Check to determine that C4 has been adjusted properly by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

**Note:** Oscillator tracks **above** signal on both bands.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** T-60 (RC-425) T-62 (RC-425-D) |
| 33719 | Belt—Tuning unit push arm belt |
| 33718 | Board—Antenna-ground board |
| 30766 | Cap—Rubber cap for tuning tube |
| 12720 | Capacitor—100 mmfd. (C6) |
| 12725 | Capacitor—150 mmfd. (C16) |
| 12694 | Capacitor—220 mmfd. (C18) |
| 12537 | Capacitor—560 mmfd. (C24) |
| 13895 | Capacitor—5,600 mmfd. 500 volt (C8) |
| 33629 | Capacitor—Trimmer capacitor, one section 2-20 mmfd. and one section 300-800 mmfd. (C9, C10) |
| 30303 | Capacitor—.0035 mfd. (C19) |
| 5107 | Capacitor—.0025 mfd. (C17) |
| 11315 | Capacitor—.015 mfd. (C25) Model T-62 |
| 32787 | Capacitor—.05 mfd. (C7) |
| 4937 | Capacitor—.01 mfd. (C20, C21) |
| 4839 | Capacitor—0.1 mfd. (C13) |
| 32342 | Capacitor—Comprising 2 sections, 10 mfd. each (C22, C23) |
| 33732 | Coil—Antenna coil (L1, L2, L3, L4) |
| 33733 | Coil—Oscillator coil (L5, L6) |
| 33631 | Control—Volume control and power switch (R4, S4) Model T-60 |
| 33776 | Control—Volume control and power switch (R4, S4) Model T-62 |
| 32634 | Cord—Braided silk drive cord |
| 33633 | Indicator—Station selector indicator pointer |
| 11765 | Lamp—Pilot lamp |
| 33734 | Plate—Dial plate assembly mounting on condenser |
| 5119 | Plug—3 contact female for speaker cable Model T-62 |
| 12261 | Resistor—390 ohms, ½ watt (R8) |
| 33489 | Resistor—15,000 ohms, 2½ watt (R2) |
| 12738 | Resistor—27,000 ohms, ½ watt (R10) Model T-62 |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12285 | Resistor—470,000 ohms, ½ watt (R6, R7) |
| 12013 | Resistor—1 megohm 1/10 watt (R9) |
| 12679 | Resistor—2.2 megohms, ½ watt (R3) |
| 13601 | Resistor—10 megohm, ½ watt (R5) |
| 33735 | Screw—Push button lock screw |
| 33725 | Shaft—Tuning drive shaft |
| 13871 | Socket—Magic Eye socket |
| 14278 | Socket—Single contact socket and plate |
| 31319 | Socket—Tube base socket |
| 31364 | Socket—Pilot lamp socket |
| 30585 | Spring—Drive cord spring |
| 33720 | Spring—Push arm return spring |
| 33630 | Switch—Tone control (S3) |
| 33632 | Switch—Range switch (S1) |
| 33634 | Switch—Radio phonograph switch (S2) |
| 33722 | Transformer—First i-f transformer (L7, L8, C11, C12) |
| 33723 | Transformer—Second i-f transformer (L9, L10, C14, C15) |
| 33619 | Transformer—Power transformer—105/125 volts, 25/60 cycles (T1) |
| 33112 | Transformer—Power transformer—105/125 volts, 50/60 cycles (T1) |
| 31575 | Transformer — Power transformer — 105/125, 200/250 volts, 50/60 cycle (T1) |
| | **SPEAKER ASSEMBLIES** (RL-78-6) Model T60 |
| 32907 | Cap—Cone center dust cap |
| 32906 | Coil—Hum neutralizing coil (L11) |
| 33601 | Coil—Speaker field coil (L13) |
| 32904 | Cone—Speaker cone and voice coil (L12) |
| 32905 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES** (RL-79A-4) Model T62 |
| 32907 | Cap—Cone center dust cap |
| 32906 | Coil—Neutralizing coil (L11) |
| 33601 | Coil—Speaker field coil (L13) |
| 32934 | Cone—Speaker cone and voice coil (L12) |
| 5118 | Plug—3 prong male for speaker |
| 32905 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33637 | Bezel—Station selector escutcheon |
| 33731 | Button—Push button |
| 34270 | Dial—Glass dial scale |
| 30863 | Knob—Station selector, or volume control and power switch knob |
| 33973 | Marker—Station marker |
| 30900 | Spring—Retaining spring for push button Stock No. 33731 |

# MODEL X60

## Chassis No. RC-474D

## Six-Tube, Push-Button, AC-DC, Superheterodyne Receiver

### Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,720 kc |
| Short Wave | 5.6-20 mc |
| Intermediate Frequency | 455 kc |
| Number of Push Buttons | Six |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-12SA7 | First Detector-Oscillator |
| (2) RCA-12SK7 | I-F Amplifier |
| (3) RCA-12SQ7 | Second Detector, A-F, and A.V.C. |
| (4) RCA-35L6GT | Power Output |
| (5) RCA-6N5 | Magic Eye |
| (6) RCA-35Z5GT | Rectifier |
| Dial Lamp | Mazda No. 51, 7.5 volts, 0.20 amp. |

POWER OUTPUT (125 volts, 60 cycle supply)

| | |
|---|---|
| Undistorted | 0.8 watts |
| Maximum | 1.4 watts |

POWER SUPPLY RATINGS

| | |
|---|---|
| A-C Rating | 105-125 volts, 50-60 cycles, 35 watts |
| D-C Rating | 105-125 volts, direct current, 35 watts |

LOUDSPEAKER (RL 85-2)

| | |
|---|---|
| Type | 5-inch permanent magnet dynamic |
| V.C. impedance at 400 cycles | 4.5 ohms |

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 9⅝ | 16 | 7 |
| Chassis Base Dimensions (inches) | 2-3/16 | 12¼ | 5⅝ |
| Overall Chassis Height | | 6¾ inches | |
| Shipping Weight | | 15 pounds | |
| Tuning Drive Ratio | | 10:1 | |

### Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

2. Check to be sure the link connection on back of chassis is in "Radio" position (connected between terminals 2 and 3).

3. Press in push-button No. 1 (left) as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the screw begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

6. Insert the station marker tabs in the recesses above the push-buttons.

### Replacement Parts

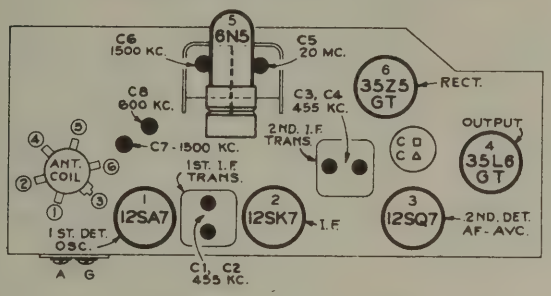
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-474D)** |
| 33719 | Belt—Push button adjusting belts |
| 34024 | Board—"Antenna-Ground" board |
| 34025 | Board—"Radio-Phono" board |
| 33731 | Button—Push button |
| 30766 | Cap—Rubber shield for Magic Eye |
| 33629 | Capacitor—Trimmer capacitor comprising of 2 sections (C7, C8) |
| 12723 | Capacitor—56 mmfd., moulded mica |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 12725 | Capacitor—150 mmfd., moulded mica |
| 12694 | Capacitor—220 mmfd., moulded mica |
| 13895 | Capacitor—5,600 mmfd., moulded mica |
| 30303 | Capacitor—.0035 mfd., 700 volts |
| 33584 | Capacitor—.005 mfd., 1,200 volts |
| 4937 | Capacitor—.01 mfd., 500 volts |
| 11315 | Capacitor—.015 mfd., 400 volts |
| 4870 | Capacitor—.025 mfd., 400 volts |
| 32787 | Capacitor—.05 mfd., 400 volts |
| 4839 | Capacitor—0.1 mfd., 400 volts |
| 34505 | Capacitor—0.2 mfd., 300 volts |
| 34212 | Capacitor—Comprising 2 sections of 50 mfd., each, 150 volts |
| 30716 | Clip—Magic Eye clip |
| 33732 | Coil—Antenna coil |
| 33733 | Coil—Oscillator coil |
| 33635 | Condenser—Tuning condenser and drum assembly |
| 33631 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 33633 | Indicator—Station selector pointer |
| 11765 | Lamp—Dial lamp—Mazda No. 51 |
| 33734 | Plate—Dial plate complete less condenser and button |
| 30880 | Resistor—150 ohms, ½ watt |
| 30152 | Resistor—1,000 ohms, 1 watt |
| 14284 | Resistor—22,000 ohms, 1/10 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 30271 | Resistor—4.7 megohm, ½ watt |
| 13601 | Resistor—10 megohm, ½ watt |
| 33438 | Screw—Magic Eye clip screw |
| 33725 | Shaft—Tuning knob drive shaft and retainer |
| 31365 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31319 | Socket—Tube socket |
| 31418 | Spring—Tuning condenser drive cord spring |
| 33720 | Spring—Push arm return spring |
| 33946 | Switch—Range switch (S1) |
| 34336 | Switch—Tone control switch (S3) |
| 33722 | Transformer—First i-f transformer (C1, C2) |
| 34026 | Transformer—Second i-f transformer (C3, C4) |
| 33726 | Washer—"C" washer for drive shaft |
| | **SPEAKER ASSEMBLIES (RL 85-2)** |
| 32907 | Cap—Cone center dust cap |
| 34554 | Cone—Speaker cone and voice coil |
| 84803 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31456 | Cover—8-protective covers for push button markers |
| 34270 | Dial—Glass dial scale |
| 33637 | Escutcheon—Dial and button escutcheon |
| 30863 | Knob—Tuning, tone, range or volume control |
| 33973 | Marker—1 set push button markers |
| 30900 | Spring—Retaining spring for knob or button |

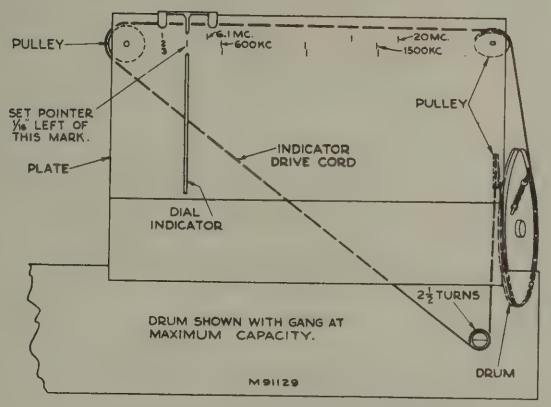
**Short-Wave Sensitivity:**

Where insufficient sensitivity is noted on the short-wave band of Model X-60, addition of capacity coupling of 3 or 4 mmfd. between signal and oscillator grids of converter tube will usually restore normal sensitivity to entire band. This coupling can be effected in several ways:

(a) Unsolder one grid lead, take several turns around other lead to give desired capacity, resolder.
(b) Twist several turns of insulated wire around both grid leads to give desired value of capacity coupling.
(c) Install a 3 to 4 mmfd. capacitor between tube grids.




*Tube and Trimmer Locations*




*Dial-Indicator and Drive Mechanism*

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver ground binding post, and keep the output as low as possible to avoid A.V.C. action.

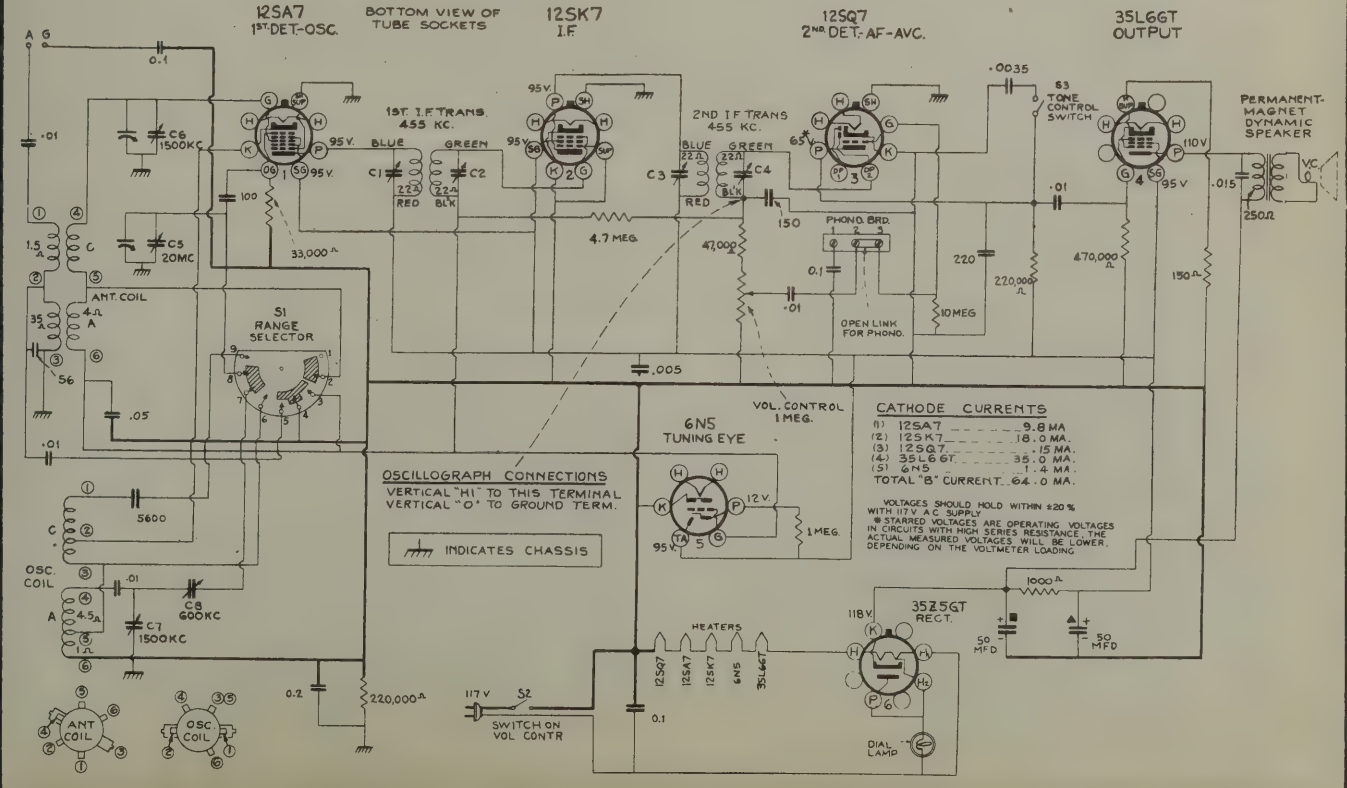
**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, 6.1 mc, and 20 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point 1/16 inch to the left of the mark at the extreme left (low frequency) end of the dial scale.

| Steps | Connect the high side of the test osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Antenna terminal | 455 kc | "A" Band Quiet Point between 550-750 kc | C3 and C4 (2nd I-F trans.) |
| 2 | | | | C1 and C2 (1st I-F trans.) |
| 3 | Antenna terminal in series with 300 ohms | 20 mc | "C" Band 20 mc calibration mark | C5 (osc.) * |
| 4 | Antenna terminal in series with 200 mmf. | 1,500 kc | "A" Band 1,500 kc calibration mark | C7 (osc.) C6 (ant.) |
| 5 | | 600 kc | "A" Band 600 kc calibration mark | C8 (osc.) Rock gang |
| 6 | Repeat step 4 | | | |

* Use minimum peak if two can be obtained. Check to determine that C5 has been adjusted properly by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

Note: Oscillator tracks **above** signal on both bands.



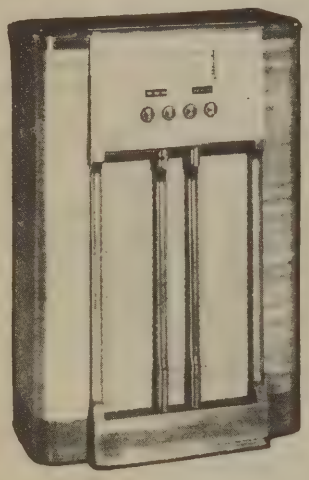
# MODEL K61

## Chassis No. RC-498F Six Tube, Two Band, AC, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ..... 540 to 1,560 kc
Short-Wave ..... 5.8 to 18 mc
Intermediate Frequency ..... 455 kc



TUBE COMPLEMENT

(1) RCA-6SA7.... 1st Detector—Oscillator
(2) RCA-6K7..... I-F Amplifier
(3) RCA-6H6.....2nd Detector—AVC
(4) RCA-6SF5..... Audio Amplifier
(5) RCA-6F6G..... Power Output
(6) RCA-5Y3G..... Rectifier
Pilot Lamp (1)..... Mazda No. 51
6.3 volts, 0.20 amp.

POWER OUTPUT RATING

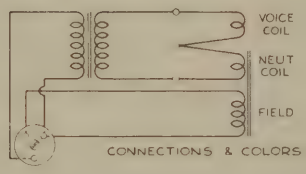
Undistorted ..... 2.5 watts
Maximum..... 4.5 watts

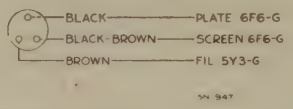
POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 75 watts
Rating B..... 105-125 volts, 25-60 cycles, 75 watts
Rating C..... 105-125, 200-250 volts, 50-60 cycles, 75 watts

LOUDSPEAKER (RL 70 H 6)

Type..... 12-inch electrodynamic
Voice Coil Impedance at 400 cycles. 2.2 ohms



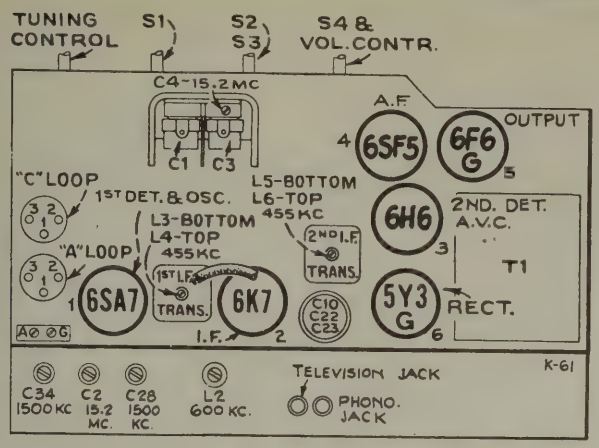

CONNECTIONS & COLORS OF SPEAKER & CABLE

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-498F)** |
| 34724 | Board—"Antenna-Ground" board |
| 34725 | Capacitor—Trimmer comprising 1 section of 3-30 mmfd. (C28) and 2 sections of 2-10 mmfd. (C2, C34) |
| 14079 | Capacitor—6.8 mmfd. (C31) |
| 30949 | Capacitor—56 mmfd. (C11, C12, C14, C15) |
| 12720 | Capacitor—100 mmfd. (C6, C33) |
| 34700 | Capacitor—120 mmfd. (C14, C15) |
| 13003 | Capacitor—180 mmfd. (C16) |
| 12694 | Capacitor—220 mmfd. (C18) |
| 12537 | Capacitor—560 mmfd. (C29) |
| 13895 | Capacitor—5600 mmfd. (C8) |
| 34459 | Capacitor—.0025 mfd. (C19) |
| 33584 | Capacitor—.005 mfd. (C17, C21) |
| 4937 | Capacitor—.01 mfd. (C7, C20) |
| 4839 | Capacitor—0.1 mfd. (C13, C5) |
| 32240 | Capacitor—Electrolytic comprising 2 sections of 10 mfd. and 1 section of 20 mfd. (C10, C22, C23) |
| 32707 | Coil—Oscillator coil (L1, L2) |
| 33215 | Control—Volume control and power switch |
| 32634 | Cord—Tuning condenser drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 33633 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 35562 | Plate—Dial plate complete less dial scale and tuner |
| 5119 | Plug—3 contact female plug for speaker cable |
| 31388 | Resistor—390 ohms, 1 watt (R14) |
| 30546 | Resistor—470 ohms, ½ watt (R14) |
| 14024 | Resistor—2,700 ohms, ½ watt (R8) |
| 12312 | Resistor—3,300 ohms, ½ watt (R10) |
| 14075 | Resistor—8,200 ohms, ½ watt (R16) |
| 35595 | Resistor—15,000 ohms, 8 watts (R2) |
| 13998 | Resistor—22,000 ohms, ½ watt (R9) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12266 | Resistor—39,000 ohms, ½ watt (R18) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7, R12) |
| 12679 | Resistor—2.2 megohm, ½ watt (R3, R19) |
| 13601 | Resistor—10 megohm, ½ watt (R5) |
| 33735 | Screw—Push arm adjusting screw |
| 34411 | Shaft—Tuning condenser drive shaft |
| 31364 | Socket—Dial lamp socket |
| 33514 | Socket—Phonograph input socket |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 34726 | Spring—Push arm return spring .018 dia. wire. |
| 34720 | Switch—Radio, Phono, Television, Tone switch (S2, S3) |
| 34722 | Switch—Range switch (S1) |
| 32263 | Transformer—First i-f transformer (L3, L4, C11, C12) |
| 34524 | Transformer—Second i-f transformer |
| 33818 | Transformer—Power transformer, 110 volts, 25 cycle |
| 33112 | Transformer—Power transformer, 110 volts, 60 cycle |
| 31575 | Transformer—Power transformer, 110-220 volts, 60 cycle |
| 33726 | Washer—Retaining washer for shaft Stock No. 34411 |
| | **SPEAKER ASSEMBLIES (RL-70H6)** |
| 31825 | Cap—Cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L13) |
| 33116 | Coil—Speaker field coil (L15) |
| 31275 | Cone—Speaker cone, voice coil and dust cap (L14) |
| 5118 | Plug—3-contact male for speaker |
| 31301 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35563 | Button—Push button |
| 31456 | Cover—Protective cover for push button markers |
| 35386 | Decalcomania—"Gramo" decal |
| 35387 | Decalcomania—"Power-Volume" decal |
| 35389 | Decalcomania—"Range" decal |
| 35392 | Decalcomania—"RCA Victor" decal |
| 35390 | Decalcomania—"Shortwave-Broadcast" decal |
| 35388 | Decalcomania—"Tone" decal |
| 35391 | Decalcomania—"Tuning" decal |
| 35385 | Decalcomania—"Victrolo-Radio-Television" decal |
| 35565 | Dial—Glass dial scale |
| 35564 | Escutcheon—Dial scale and push button escutcheon less scale and buttons |
| 34583 | Frame—Frame only for "C" band loop |
| 34998 | Knob—Tuning, volume, tone, and range switch knob |
| 34800 | Loop—Antenna loop complete for "A" band |
| 33973 | Marker—Station selector markers |
| 34872 | Pins—Dowel pins for "A" band loop |
| 34990 | Plug—2-prong male plug for "C" band loop |
| 32641 | Plug—3-prong male plug for "A" band loop |
| 14270 | Spring—Retaining spring for button Stock No. 35563 and knob Stock No. 34998 |

## Alignment Procedure




*Tube and Trimmer Locations*

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown on the chassis schematic.

**Output Meter Alignment.**—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

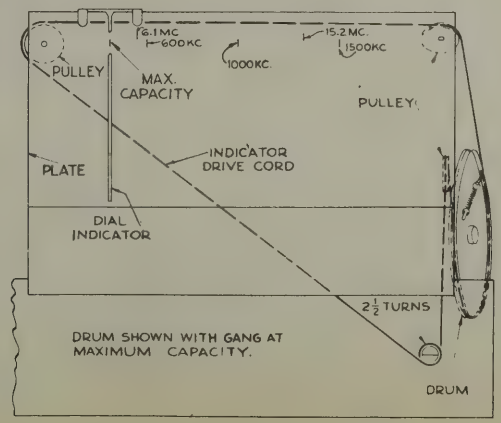
For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect test-osc. output to— | Tune test-osc. to— | Turn radio dial to | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I-F grid through 0.1 mfd capacitor and ground | 455 kc | Quiet point between 1,720-1,500 kc | L5 and L6 (2nd I-F trans.) |
| 2 | 1st det. grid through 0.1 mfd capacitor and ground | | | L3 and L4 (1st I-F trans.) |
| 3 | | 15.2 mc | 15.2 mc | C-4 oscillator* |
| 4 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 15.2 mc | Rock at 15.2 mc | C-2 antenna† while rocking |
| 5 | | 6.1 mc | 6.1 mc | Spacing between leads from "C" band loop to chassis |
| 6 | | 15.2 mc | Rock at 15.2 mc | C-2 antenna† while rocking |
| 7 | | 1,500 kc | 1,500 kc | C-34 antenna C-28 oscillator |
| 8 | | 600 kc | Rock at 600 kc | L-2 oscillator while rocking |
| 9 | | 1,500 kc | 1,500 kc | C-34 antenna C-28 oscillator |

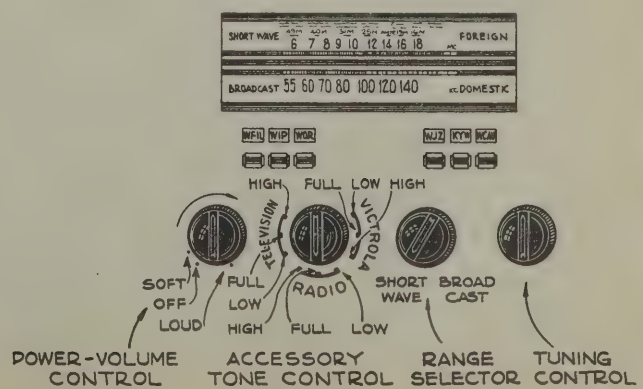
When making adjustments 4 to 9 inclusive the chassis must be in the cabinet, both loops connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

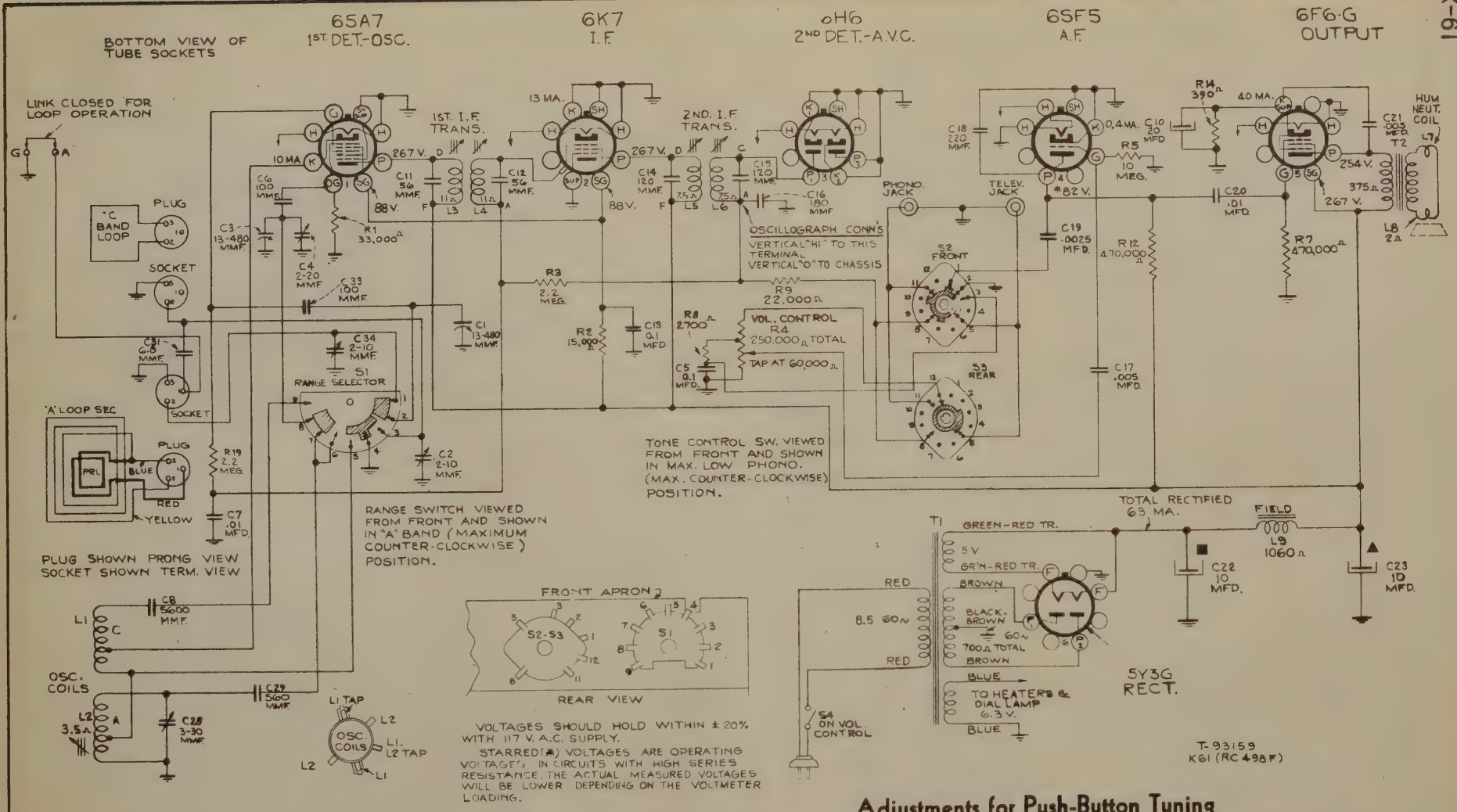
† If two peaks can be obtained use low frequency (maximum capacity) peak.




*Dial Indicator and Drive Mechanism*




*Dial and Controls*




VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY.

STARRED(*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE. THE ACTUAL MEASURED VOLTAGES WILL BE LOWER DEPENDING ON THE VOLTMETER LOADING.

**Precautionary Lead Dress.—**

1. Dress AC switch leads away from 6SF5 tube socket.
2. Do not twist loop leads together or around each other. Spacing between leads from "C" band loop to chassis is important—see alignment step "5".
3. "High side" leads from loop sockets, range switch, oscillator coil, and trimmers must be dressed away from chassis and each other.
4. Dress C-6 and C-33 away from each other.
5. Dress C-17 away from power switch leads.

## Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up for any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.
2. Set the receiver for "Radio" operation, range selector on "Broadcast", and accurately tune in the station for which the first button is to be set.
3. Press in the first push-button rod (left) with the screwdriver as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.
4. Replace the push-button on its shaft.
5. Proceed in a similar manner for the remainder of the push-buttons.
6. Insert the station marker tabs in the recesses above the push-buttons.

# MODEL T63

## Six-Tube, Two-Band, A-C, Superheterodyne Receiver Chassis No. RC-472F

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ..... 550-1,550 kc
Short Wave ..... 5.8-18 mc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SA7 ..... 1st Detector-Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6SQ7 .. 2nd Detector, AVC, and A-F Amplifier
(4) RCA-6F6G ..... Power Output
(5) RCA-6U5/6G5 ..... Tuning Indicator
(6) RCA-5Y3G ..... Rectifier

PILOT LAMP (1) ..... Mazda No. 51, 6.3 volts, 0.20 amps.

POWER OUTPUT RATING

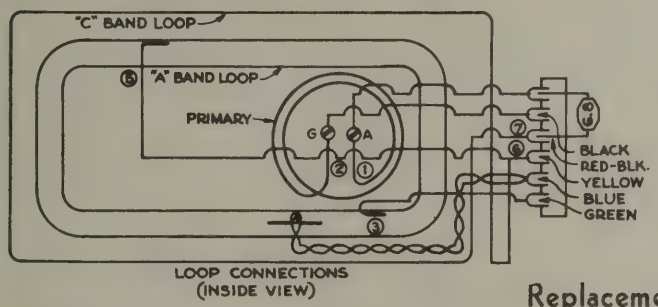
Undistorted ..... 2.5 watts
Maximum ..... 4.5 watts

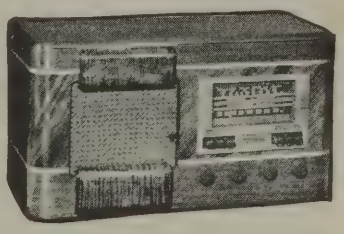
LOUDSPEAKER (RL 79 A 4)

Type ..... 6 inch Electrodynamic
Voice Coil Impedance at 400 Cycles ..... 3.4 ohms

POWER SUPPLY RATINGS

Rating A ..... 105-125 volts, 50-60 cycles, 75 watts
Rating B ..... 105-125 volts, 25-60 cycles, 75 watts
Rating C .... 105-125, 200-250 volts, 50-60 cycles, 75 watts



**Additional Replacement Parts:**

Stock No.
31456 Cover—Celluloid covers (20) for push buttons .....
33973 Marker—Station call letter markers.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC 472-F)** |
| 35586 | Back—Back complete with loops |
| 33719 | Belt—Tuning unit push arm belt |
| 30766 | Cap—Rubber cap for tuning tube |
| 34725 | Capacitor—Mica trimmer consisting of 1 section of 3-30 mmfd. (C9) and 2 sections of 2-10 mmfd. (C26 and C27) |
| 14079 | Capacitor—6.8 mmfd. (C2) |
| 30949 | Capacitor—56 mmfd. (C11, C12, C14, C15) |
| 12720 | Capacitor—100 mmfd. (C6) |
| 12725 | Capacitor—150 mmfd. (C16, C25) |
| 12694 | Capacitor—220 mmfd. (C18) |
| 12537 | Capacitor—560 mmfd. (C10) |
| 13895 | Capacitor—5,600 mmfd. (C8) |
| 30303 | Capacitor—.0035 mfd. (C19) |
| 33584 | Capacitor—.005 mfd. (C17, C21, C30) |
| 4937 | Capacitor—.01 mfd. (C20, C28) |
| 4839 | Capacitor—0.1 mfd. (C13) |
| 12484 | Capacitor—0.25 mfd. (C31) |
| 4870 | Capacitor—.025 mfd. (C29) |
| 32787 | Capacitor—.05 mfd. (C7) |
| 32240 | Capacitor—Electrolytic—comprising 2 sections of 10 mfd. (C22 and C23) and 1 section of 20 mfd (C24) |
| 34285 | Clip—Clip and screw for tuning tube |
| 35443 | Coil—Loop loading coil |
| 32707 | Coil—Oscillator coil |
| 35585 | Control—Volume control and power switch |
| 32713 | Core—Adjusting core and stud for oscillator coil |
| 32634 | Cord—Drive cord |
| 33633 | Indicator—Station selector indicator |
| 11765 | Lamp—Dial lamp |
| 35586 | Loop—Loops ("A" and "C" bands) complete with back |
| 35594 | Plate—Dial plate complete less tuner and dial |
| 5119 | Plug—3 contact female plug for speaker cable |
| 30681 | Resistor—470 ohms, 1 watt (R8) |
| 35595 | Resistor—15,000 ohms, 3 watt (R2) |
| 13045 | Resistor—18,000 ohms, ½ watt (R11) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1) |
| 12412 | Resistor—47,000 ohms, ½ watt (R10) |
| 12285 | Resistor—470,000 ohms, ½ watt (R6, R7, R12) |
| 12013 | Resistor—1 megohm, 1/10 watt (R13) |
| 12928 | Resistor—3.3 megohm, ½ watt (R3) |
| 13601 | Resistor—10 megohm, ½ watt (R5) |
| 33735 | Screw—Push button lock screw |
| 33725 | Shaft—Tuning condenser drive shaft |
| 31364 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 34799 | Socket—Tuning tube socket |
| 31418 | Spring—Drive cord spring |
| 33720 | Spring—Push arm return spring |
| 35584 | Switch—Radio—Record switch |
| 35177 | Switch—Range switch |
| 32263 | Transformer—First I.F. transformer |
| 34719 | Transformer—Second I.F. transformer |
| 35587 | Transformer—Power transformer, 110 volt, 60 cycle |
| 35588 | Transformer—Power transformer, 110 volt, 25 cycle |
| 33635 | Tuner—6 button tuning condenser |
| 33726 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL 79A4)** |
| 32907 | Cap—Dust cap |
| 32906 | Coil—Neutralizing coil (L11) |
| 33601 | Coil—Field coil (L13) |
| 35441 | Cone—Cone complete with voice coil and center suspension |
| 5118 | Plug—3 contact male connector plug for reproducer |
| 32905 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35563 | Button—Push button |
| 35592 | Decalcomania—Control decal |
| 35392 | Decalcomania—"RCA Victor" decal |
| 35462 | Decalcomania—"Television — Radio — Victrola" decal |
| 35589 | Dial—Glass dial scale |
| 35591 | Escutcheon—Dial scale and push button escutcheon less scale and button |
| 35590 | Knob—Tuning, range, volume control, or radio record switch knob |
| 30900 | Spring—Retaining spring for button, Stock No. 35563, and knob, Stock No. 35590 |

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action. The low side of the test-oscillator should be connected to the receiver chassis.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, adjust the dial indicator along the drive cable to the 540 kc mark, gang condenser fully meshed. The indicator has a clip for attachment to the cable.

**Precautionary Lead Dress:**

(1) Dress C8 (Oscillator coil to range switch) and its leads away from surrounding wires and chassis.

(2) Dress R2 (Screen to B+) away from surrounding wires and parts.

(3) Dress power switch leads away from 6SQ7 and 6F6G tube sockets.

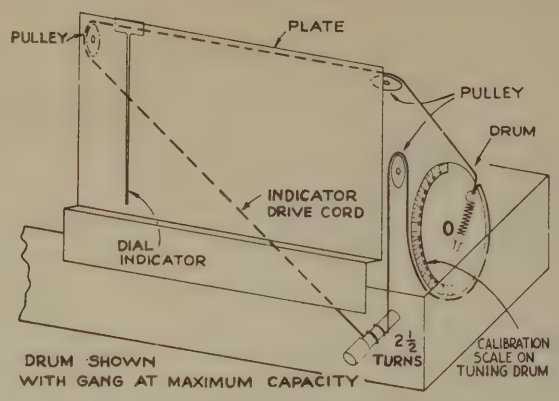
For additional details, refer to booklet "RCA Victor Receiver Alignment."

| Steps | Connect high side of test-osc. to— | Tune test osc. to— | Turn radio Dial to | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | Grid of 6K7 through 0.01 mfd. | 455 kc | "A" band Quiet point between 550-750 kc | L5 and L6 (2nd I-F trans.) |
| 2 | Grid of 6SA7 through 0.01 mfd. | | | L3 and L4 (1st I-F trans.) |
| 3 | Antenna terminal through 300 ohms | 15 mc | "C" band 15 mc (132°) | C4 osc.* C27 ant.** |
| 4 | Antenna terminal through 200 mmfd. | 600 kc | "A" band 600 kc (23.5°) | L2 osc. (Rock in) |
| 5 | | 1,500 kc | "A" band 1,500 kc (156.5°) | C9 osc. C26 ant. |
| 6 | Repeat Steps 4 and 5 | | | |

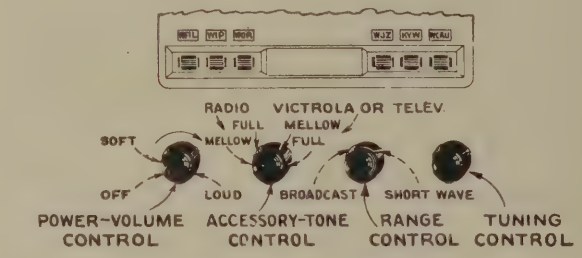
* Use minimum capacity peak if two can be obtained.

** Use maximum capacity peak if two can be obtained.

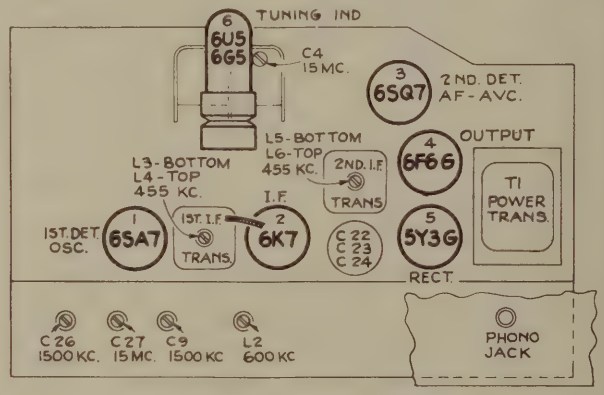
NOTE: Oscillator tracks above signal on all bands.




*Dial Indicator and Drive Mechanism*

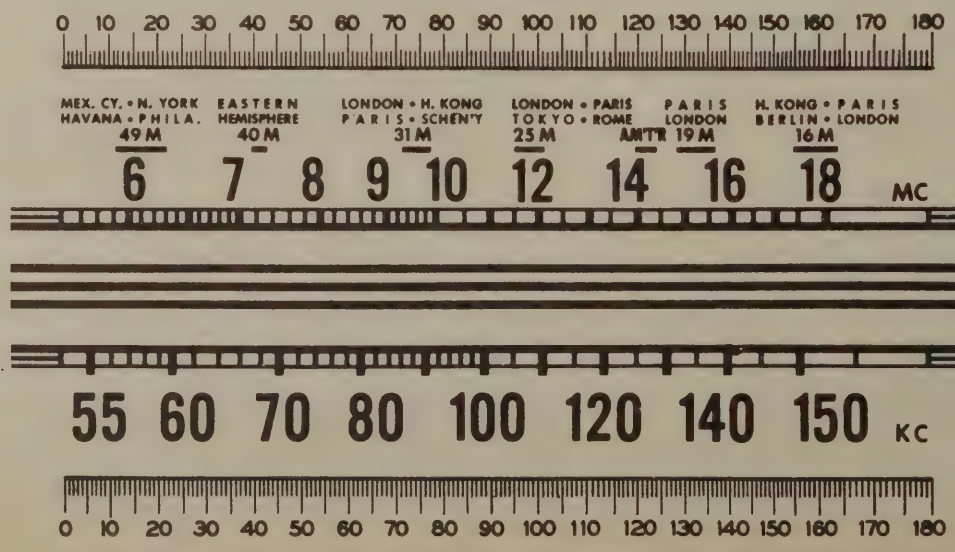



*Dial and Controls*



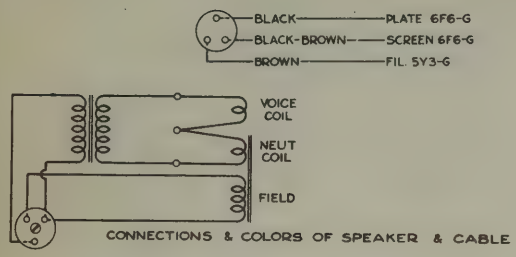

*Tube and Trimmer Locations*

## Calibration Scale




*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

# Adjustments for Push-Button Tuning



CONNECTIONS & COLORS OF SPEAKER & CABLE

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up for any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button rods with a small screwdriver.

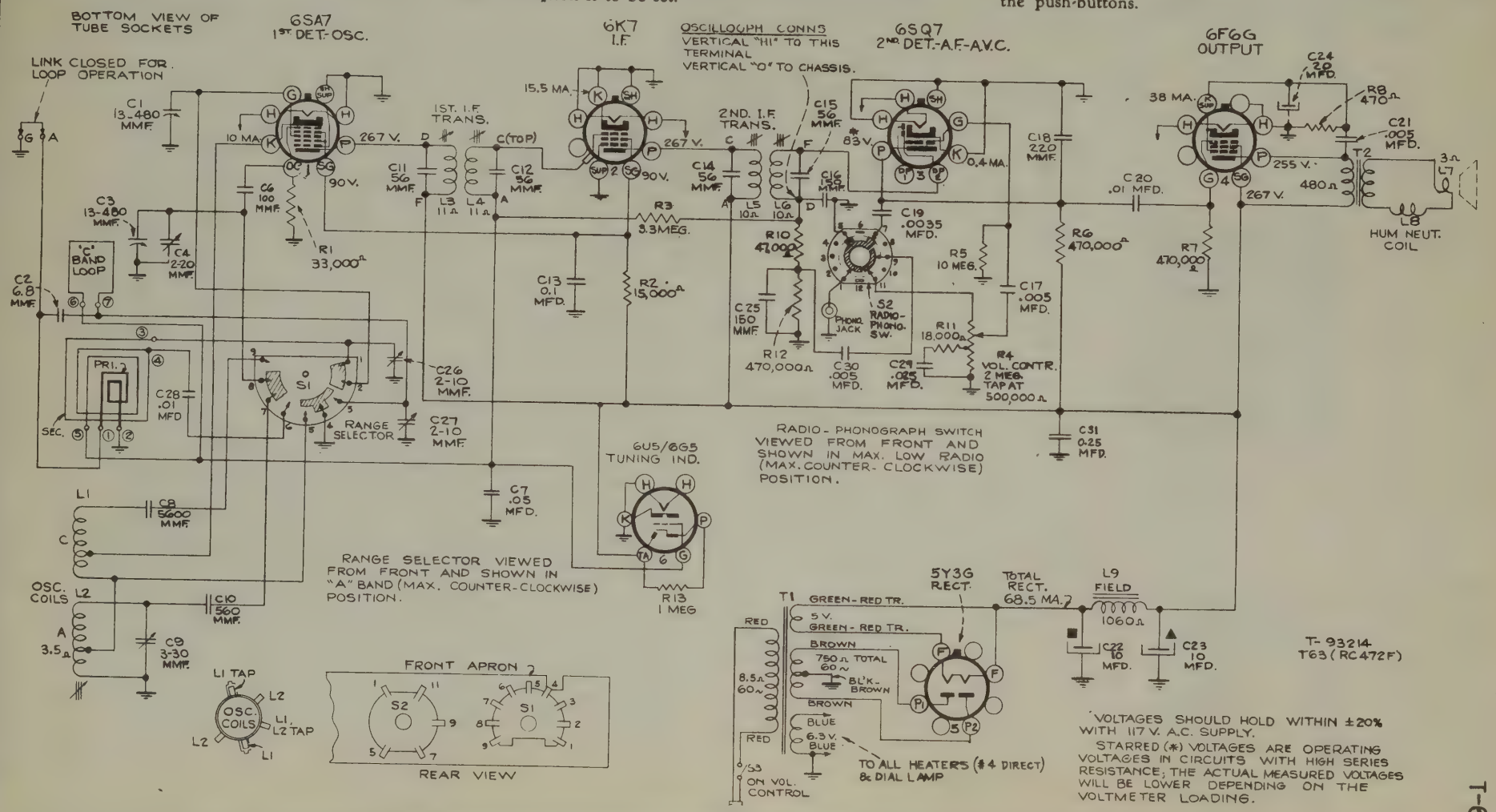
2. Set the receiver for "Radio" operation, range selector on "Broadcast", and accurately tune in the station for which the first button is to be set.

3. Press in the first push-button rod (left) with the screwdriver as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the rod. Do not tighten more than ¼ turn after the rod begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

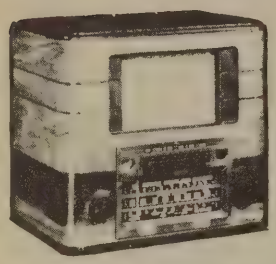
6. Insert the station marker tabs in the recesses above the push-buttons.



# Models T-64 T-65 and T-80

Chassis No. RC-416 RC-416A

## Six- and Eight-Tube, Three-Band, AC, Superheterodyne Receivers



RCA Victor T-64.

T-65

RCA Victor T-80.

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ..... 540-1,720 kc
Medium Wave ..... 2.3-7.0 mc
Short Wave ..... 7.0-22.0 mc

INTERMEDIATE FREQUENCY ..... 455 kc

### MODELS T-64, T-65

TUBE COMPLEMENT

(1) RCA-6SA7... 1st Detector—Oscillator
(2) RCA-6SK7..... I-F Amplifier
(3) RCA-6SQ7..... 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-6F6-G..... Power Output
(5) RCA-6U5/6G5..... Tuning Indicator
(6) RCA-5Y3-G..... Rectifier

PILOT LAMPS (2).. Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

Undistorted..... 2.5 watts
Maximum..... 4.5 watts

LOUDSPEAKER (RL-79-4)

Type..... 6-inch Electrodynamic
V.C. Impedance..... 3.4 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 75 watts

Rating B..... 105-125 volts, 25-60 cycles, 75 watts

Rating C..... 100-130, 140-160, 195-250 volts, 40-60 cycles, 75 watts

### MODEL T-80

TUBE COMPLEMENT

(1) RCA-6SA7 .... 1st. Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd. Detector, A.V.C., and A-F Amplifier
(4) RCA-6SF5 ..... Inverter
(5) RCA-6F6-G ..... Output
(6) RCA-6F6-G ..... Output
(7) RCA-5Y3-G ..... Rectifier
(8) RCA-6U5/6G5 ..... Tuning Indicator

PILOT LAMPS (2)..... Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

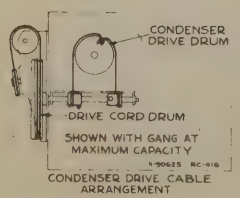
Undistorted ..... 5.0 watts
Maximum ..... 5.5 watts

LOUDSPEAKER (RL-79-5)

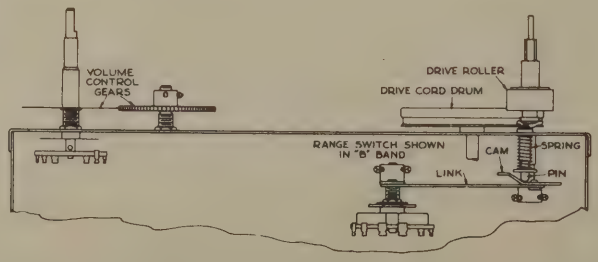
Type ..... 6-inch electrodynamic
V.C. Impedance..... 3.4 ohms at 400 cycles

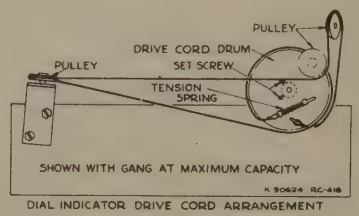
POWER SUPPLY RATINGS

Rating "A" ..... 105-125 volts, 50-60 cycles, 85 watts
Rating "B" ..... 105-125 volts, 25-60 cycles, 85 watts
Rating "C" .... 100-130, 140-160, 195-250 volts, 40-60 cycles, 85 watts




CONDENSER DRIVE CABLE ARRANGEMENT




DIAL INDICATOR DRIVE CORD ARRANGEMENT

Note: Adjustment of the link and cam should be such that in "A" band position when push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

**Note:** On some receivers the following circuit changes are in effect:

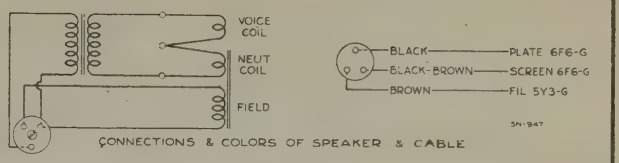
1. C1 is 470 mmfd.
2. There are three types of 2nd. I-F transformers in use.

a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown below.

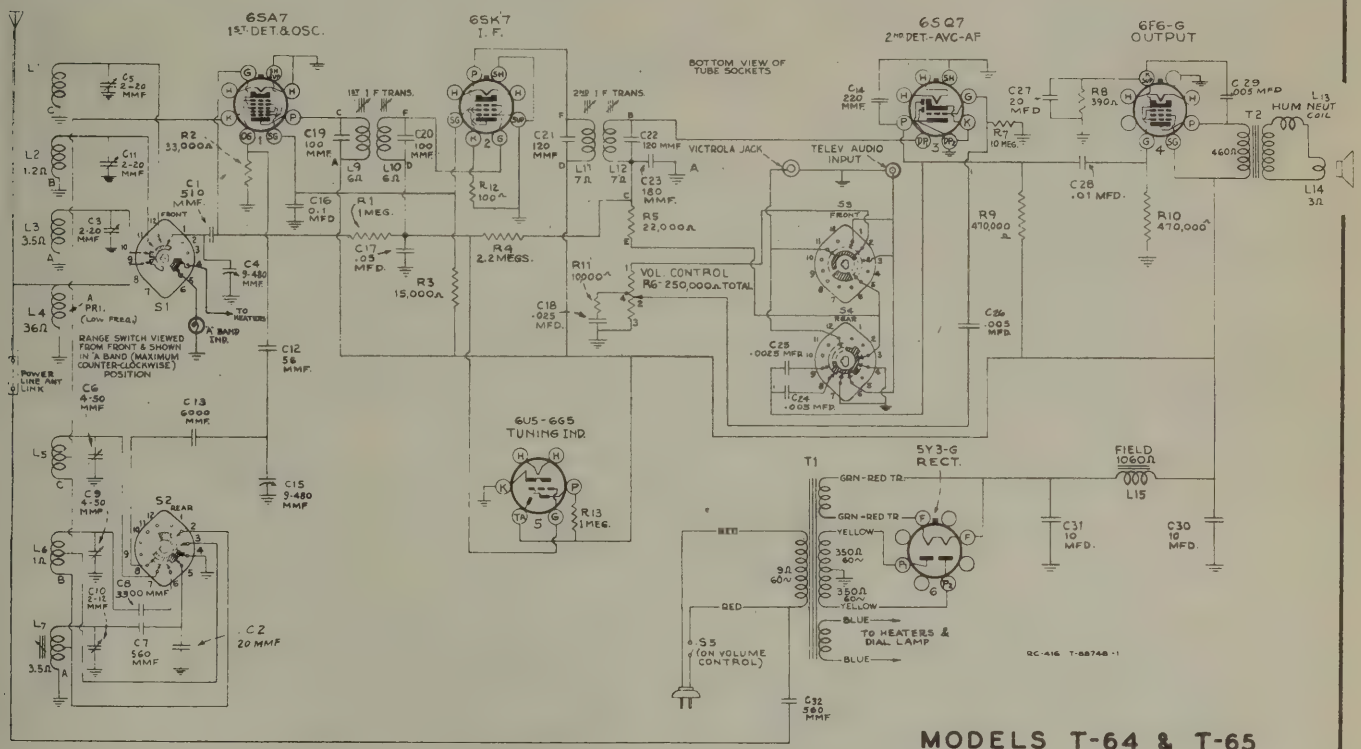
b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.

c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the schematic diagram.

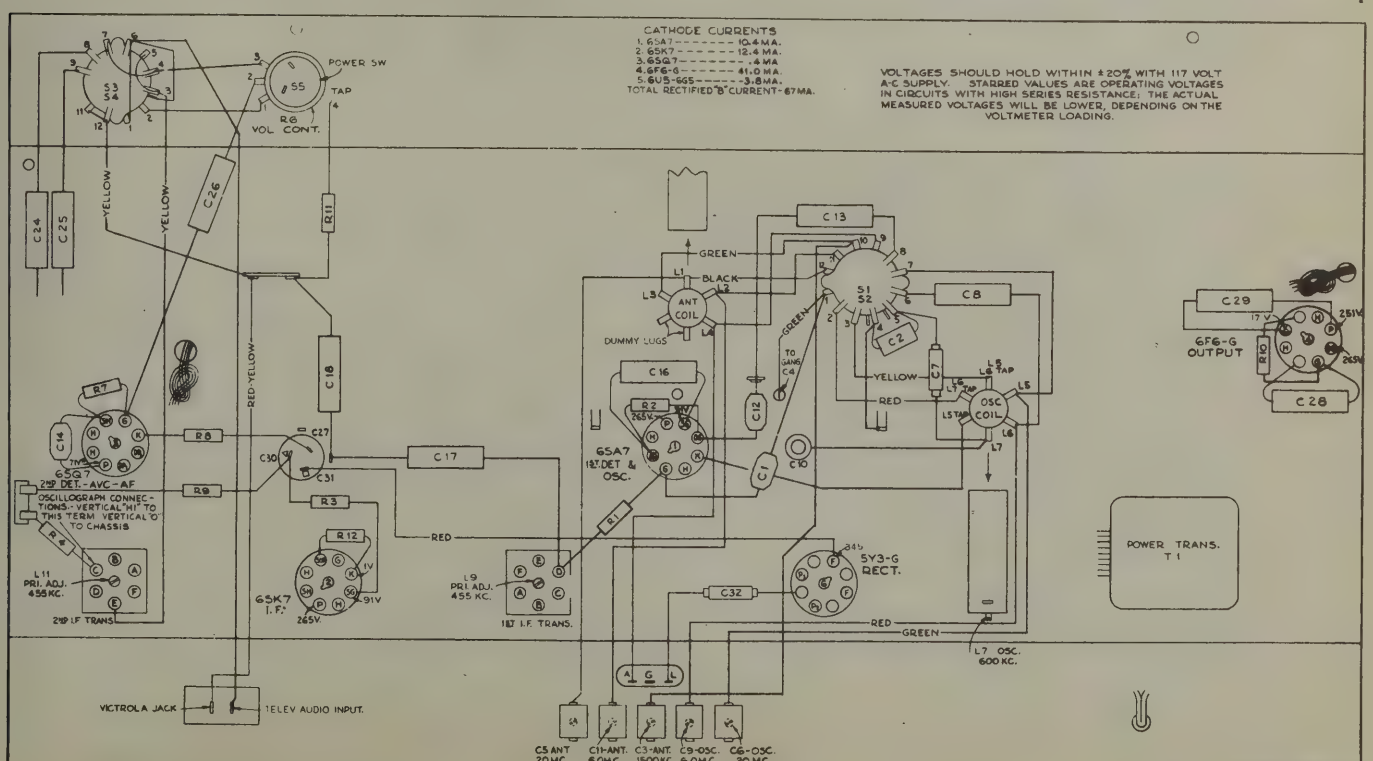
**Important:** Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the schematic diagram.




CONNECTIONS & COLORS OF SPEAKER & CABLE



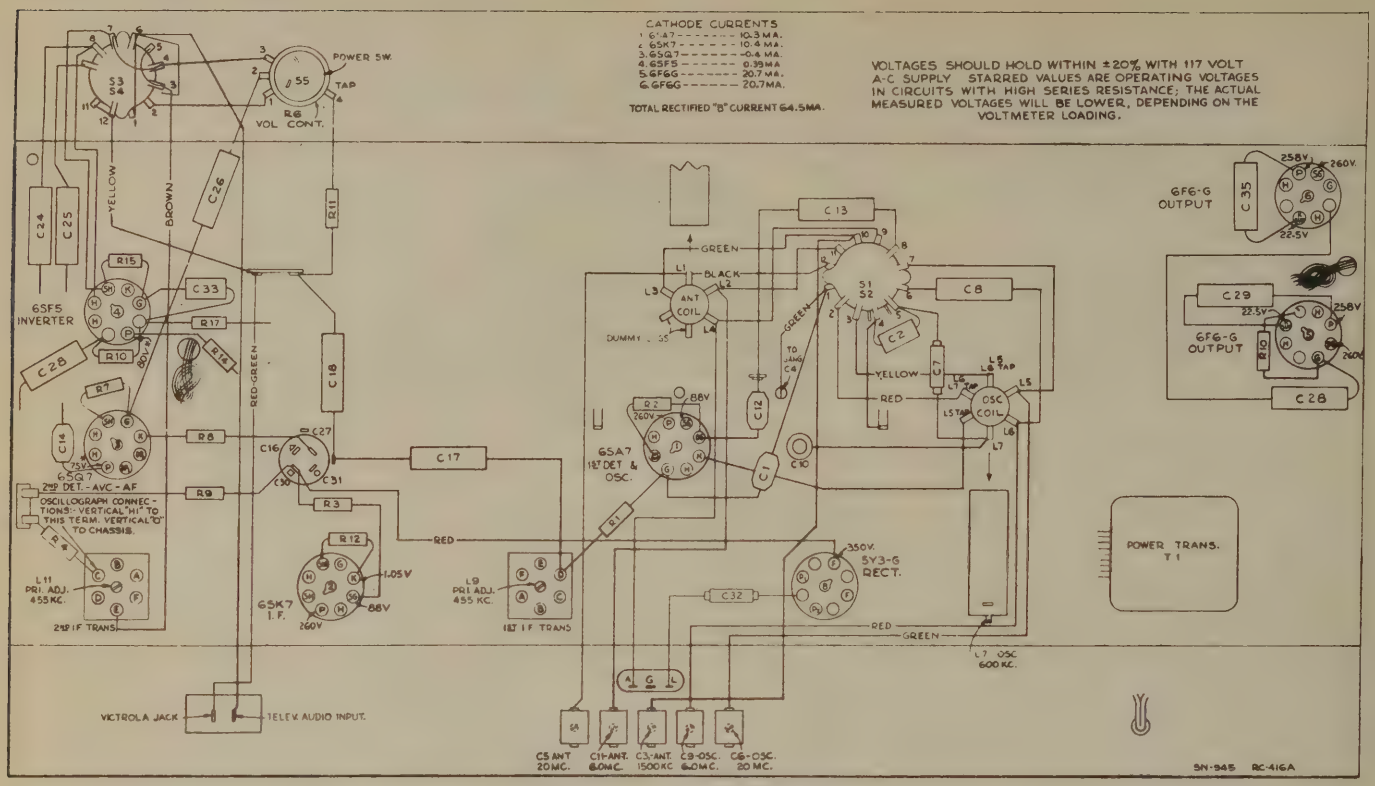

MODELS T-64 & T-65


CATHODE CURRENTS
1. 6SA7 ------- 10.4 MA.
2. 6SK7 ------- 12.4 MA.
3. 6SQ7 ------- .4 MA.
4. 6F6-G ------- 41.0 MA.
5. 6U5-6G5 ------ 3.8 MA.
TOTAL RECTIFIED 'B' CURRENT - 67 MA.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 VOLT A-C SUPPLY. STARRED VALUES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
POWER SW
VOL CONT.
TAP
DUMMY LUGS
TO GANG C4
6SA7 1ST. DET. & OSC.
6SQ7 2ND DET.-AVC-AF
6SK7 I. F.
6F6-G OUTPUT
5Y3-G RECT.
POWER TRANS. T1
OSCILLOGRAPH CONNECTIONS - VERTICAL 'H' TO THIS TERM VERTICAL 'G' TO CHASSIS
L11 PRI. ADJ. 455 KC.
2ND I.F. TRANS.
L9 PRI ADJ. 455 KC.
1ST I.F. TRANS.
L7 OSC. 600 KC.
VICTROLA JACK
TELEV AUDIO INPUT.
C5 ANT 20 MC.
C11-ANT. 6.0 MC.
C3-ANT. 1500 KC.
C9-OSC. 6.0 MC.
C6-OSC. 20 MC.

BOTTOM VIEW - REAR OF CHASSIS

R-F. WIRING & SOCKET VOLTAGES

# T-64, T-65, T-80


CATHODE CURRENTS
1. 6SA7 ------- 10.3 MA.
2. 6SK7 ------- 10.4 MA.
3. 6SQ7 ------- 0.4 MA.
4. 6SF5 ------- 0.39 MA.
5. 6F6G ------- 20.7 MA.
6. 6F6G ------- 20.7 MA.
TOTAL RECTIFIED "B" CURRENT 64.5 MA.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 VOLT A-C SUPPLY. STARRED VALUES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE; THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING.
POWER SW.
TAP
R6 VOL CONT.
6SF5 INVERTER
6SQ7 2ND DET. - AVC - AF
OSCILLOGRAPH CONNECTIONS: VERTICAL "H" TO THIS TERM. VERTICAL "G" TO CHASSIS.
2ND I.F. TRANS
6SK7 I.F.
1ST I.F. TRANS
6SA7 1ST DET. & OSC.
ANT COIL
OSC COIL
DUMMY .55
6F6-G OUTPUT
5Y3-G RECT.
POWER TRANS. T1
VICTROLA JACK
TELEV. AUDIO INPUT
C5 ANT 20 MC.
C11 ANT. 6.0 MC.
C3 ANT. 1500 KC
C9 OSC. 6.0 MC.
C6 OSC. 20 MC.
L7 OSC 600 KC.
SN-945 RC-416A

## MODEL T-80

BOTTOM VIEW - REAR OF CHASSIS

### RF WIRING & SOCKET VOLTAGES

**Note:** On some receivers the following circuit modifications are in effect:

1. R11 is 5,600 ohms, and C18 is 0.1 mfd.

2. C1 is 470 mfd.; R15 is 2,700 ohms and is connected from cathode of 6SF5 Inverter to ground; R17 is 15,000 ohms; and C33 is omitted.

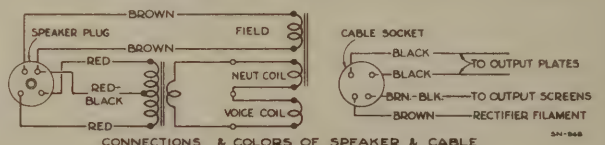
3. There are three types of 2nd I-F transformers in use.

a. The first type (Stock No. 14308) has C23 and R5 mounted inside the case, and is connected exactly as shown below.

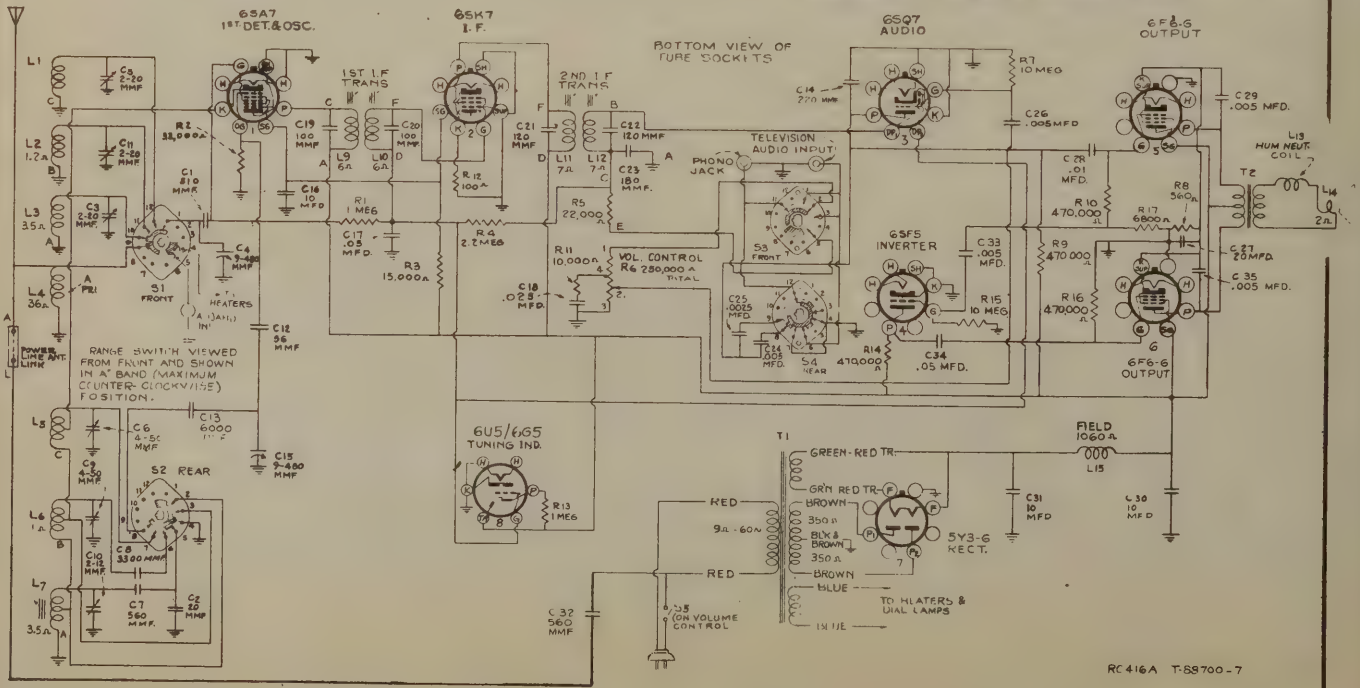
b. In the second type R5 is omitted and the lead from S4 connects to C instead of E. E is not used.

c. In the third type R5 is omitted and C23 is connected externally from C to ground. E is not used. The lead from the diode plate connects to A instead of B. When replacing this transformer with Stock No. 14308, remove the external C23 and connect the replacement transformer as shown in the schematic diagram.

**Important:** Stock No. 14308 is used as replacement for all three of the above types, and should be connected as shown in the schematic




CONNECTIONS & COLORS OF SPEAKER & CABLE



# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord-Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 240° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

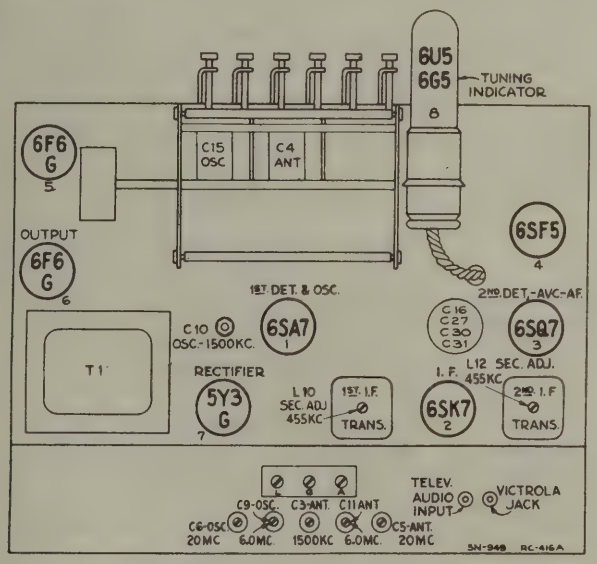
**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 240° mark on the calibration scale when the plates are fully meshed.

| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6SK7 grid in series with .01 mfd. | 455 kc | "A" Band Quiet Point between 550-750 kc | L11 and L12 (2nd I-F Trans.) |
| 2 | 6SA7 grid in series with .01 mfd. | | | L9 and L10 (1st I-F Trans.) |
| 3 | Ant. terminal in series with 300 ohms | 20 mc | 20 mc (40°) "C" Band | C6 (osc.)* C5 (ant.) |
| 4 | | 6 mc | 6 mc (52.5°) "B" Band | C9 (osc.)** C11 (ant.) |
| 5 | Ant. terminal in series with 200 mmfd. | 1,500 kc | 1,500 kc (41.75°) "A" Band | C10 (osc.) C3 (ant.) |
| 6 | | 600 kc | 600 kc (200.25°) "A" Band | L7 (osc.) Rock Gang |
| 7 | Repeat step 5. | | | |

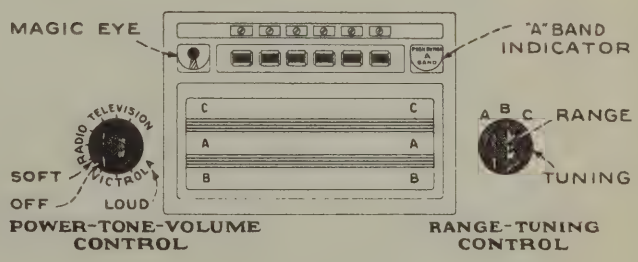
* Use minimum capacity peak if two can be obtained. Check to determine that C6 has been adjusted to correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

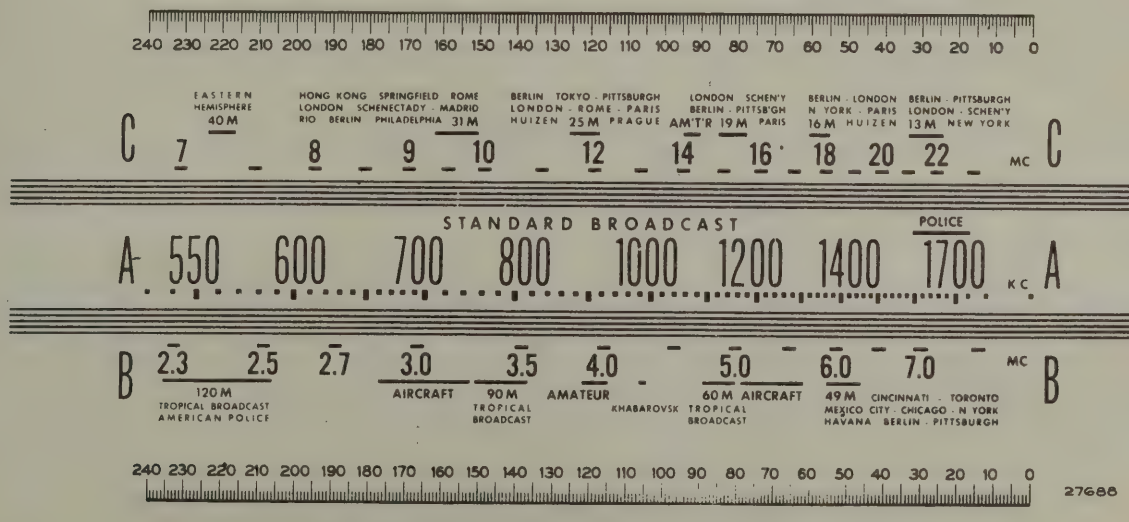
** Use minimum capacity peak if two can be obtained. Check to determine that C9 has been adjusted to correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

**Note:** Oscillator tracks above signal on all bands.




*Tube and Trimmer Locations*
*Note: Tube #485 used on Model T-80 only*





240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
EASTERN HEMISPHERE 40M
HONG KONG SPRINGFIELD ROME LONDON SCHENECTADY MADRID RIO BERLIN PHILADELPHIA 31M
BERLIN TOKYO PITTSBURGH LONDON ROME PARIS HUIZEN 25M PRAGUE
LONDON SCHEN'Y BERLIN PITTSB'GH AM'T'R 19M PARIS
BERLIN LONDON N YORK PARIS 16M HUIZEN
BERLIN PITTSBURGH LONDON SCHEN'Y 13M NEW YORK
C 7 8 9 10 12 14 16 18 20 22 MC C
STANDARD BROADCAST
POLICE
A 550 600 700 800 1000 1200 1400 1700 KC A
B 2.3 2.5 2.7 3.0 3.5 4.0 5.0 6.0 7.0 MC B
120 M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90 M TROPICAL BROADCAST
AMATEUR
KHABAROVSK
60 M AIRCRAFT TROPICAL BROADCAST
49 M CINCINNATI TORONTO MEXICO CITY CHICAGO N YORK HAVANA BERLIN PITTSBURGH
240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27688

*Receiver-Dial Scales, and Corresponding 0-240° Calibration Scales*

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 200.25° on the calibration scale corresponds to 600 kc on "A" band. Read instructions under "Alignment Procedure."

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-416)** |
| 33620 | Arm—Push arm and cam assembly on tuning unit—less lock screw |
| 33430 | Board—Antenna and ground terminal board |
| 34268 | Cap—Rubber cap for tuning tube |
| 12714 | Capacitor—Air trimmer, 2-12 mmfd. (C10) |
| 33429 | Capacitor—Trimmer capacitor bank, two 4-50 mmfd., three 2-20 mmfd., sections (C3, C5, C6, C9, C11) |
| 32792 | Capacitor—25 mmfd. (C2) |
| 12723 | Capacitor—56 mmfd. (C12) |
| 30904 | Capacitor—100 mmfd. (C19, C20) |
| 12404 | Capacitor—120 mmfd. (C21, C22) |
| 14712 | Capacitor—180 mmfd. (C23) |
| 12694 | Capacitor—220 mmfd. (C14) |
| 30433 | Capacitor—470 mmfd. (C1) |
| 12537 | Capacitor—560 mmfd. (C32) |
| 31433 | Capacitor—560 mmfd. (C7) |
| 31403 | Capacitor—3,300 mmfd. (C8) |
| 31405 | Capacitor—6,000 mmfd. (C13) |
| 5107 | Capacitor—.0025 mfd. (C25) |
| 4838 | Capacitor—.005 mfd. (C24, C26, C29) |
| 4937 | Capacitor—.01 mfd. (C28) |
| 4870 | Capacitor—.025 mfd. (C18) |
| 32787 | Capacitor—.05 mfd. (C17) |
| 4839 | Capacitor—0.1 mfd. (C16) |
| 32240 | Capacitor—Electrolytic, two 10 mfd., and one 20 mfd. sections (C27, C30, C31) |
| 33508 | Clip—Magic Eye mounting clip and bracket |
| 32821 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil (L5, L6, L7) |
| 32635 | Cord—Condenser drive cord |
| 32634 | Cord—Drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 33627 | Drum—Condenser drive drum |
| 34267 | Drum—Drive cord drum |
| 33186 | Gear—Volume control knob shaft and gear |
| 33185 | Gear—Volume control gear and hub, with set screws |
| 11891 | Lamp—Dial lamp |
| 33431 | Link—Antenna and ground terminal board link |
| 34041 | Link—Link complete with arm and cam for operating range switch |
| 33628 | Plate—Front guide plate for push arms |
| 13871 | Plug—Eye cable plug |
| 5119 | Plug—Speaker cable plug |
| 33509 | Pulley—Drive cord pulley and bracket (1 pulley) |
| 33510 | Pulley—Drive cord pulleys and bracket (2 pulleys) |
| 33626 | Pulley—Drive pulley |
| 14439 | Resistor—100 ohms, ½ watt (R12) |
| 31388 | Resistor—390 ohms, 1 watt (R8) |
| 14559 | Resistor—10,000 ohms, ½ watt (R11) |
| 33489 | Resistor—15,000 ohms, 2.5 watts (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9, R10) |
| 12013 | Resistor—1 meg., 1/10 watt (R13) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 14343 | Retainer—Retaining ring for volume control knob shaft |
| 34040 | Ring—Retaining ring for tuning shaft |
| 4669 | Screw—No. 8-32 sq. hd. set screw for volume control gear and drum |
| 33621 | Screw—Push arm lock screw |
| 34039 | Shaft—Range switch knob shaft |
| 33624 | Shaft—Tuning condenser drive shaft and washer |
| 34038 | Shaft—Tuning knob shaft with rubber drive roller and pulley assembled |
| 33545 | Shield—Dial lamp shield |
| 31364 | Socket—Dial lamp socket |
| 33514 | Socket—Phonograph and Television socket |
| 31319 | Socket—Tube socket |
| 33544 | Spring—Drive cord tension spring |
| 33623 | Spring—Drive drum cord spring |
| 33622 | Spring—Push arm return spring |
| 34042 | Spring—Spring and pin for range switch shaft |
| 33515 | Spring—Tension spring for spring and pin |
| 33513 | Switch—Range switch (S1, S2) |
| 33511 | Tone Control, Television and Phono switch (S3, S4) |
| 33428 | Transformer—First i-f transformer (L9, L10, C19, C20) |
| 14308 | Transformer—Second i-f transformer (L11, L12, C21, C22, C23, R5) |
| 33619 | Transformer—Power transformer 105-120 volts, 25-60 cycles (T1) |
| 33112 | Transformer—Power transformer 105-120 volts, 50-60 cycles (T1) |
| 31446 | Transformer—Power transformer—Universal 60 cycle (T1) |
| 33512 | Volume control and power switch (R6, S5) |
| 33726 | Washer—"C" washer for spring and pin |
| 34037 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-79-4)** |
| 32907 | Cap—Cone center dust cap |
| 32906 | Coil—Hum neutralizing coil (L13) |
| 33547 | Coil—Speaker field coil (L15) |
| 5118 | Plug—3-contact male plug for speaker |
| 32905 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33474 | Button—Push button |
| 33552 | Dial—Glass dial scale |
| 33549 | Escutcheon—Dial and push button escutcheon—less buttons and screen |
| 33551 | Frame—Dial frame, holder, and pointer assembled—less dial |
| 33842 | Marker—Station selector call letter markers |
| 33550 | Screen—"Push button 'A' Band" marker screen |
| 30330 | Spring—Retaining spring for knob Stk. No. 33470 |
| 14270 | Spring—Retaining spring for knob Stk. No. 33553 and Stock No. 33471 |
| 4982 | Spring—Retaining spring for knob Stk. No. 33505 |

## MODEL T-64

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 35441 | Cone—Speaker cone and voice coil |
| 33471 | Knob—Tuning knob |
| 33553 | Knob—Tone control knob |
| 33470 | Knob—Range selector knob |
| 33505 | Knob—Volume control knob |

## MODEL T-65, RC-416

**Technical Information and Service Data:**

Refer to Model T-64 Service Data, and the following parts used in T-65:

| Stock No. | |
|---|---|
| 34994 | Button—Push button |
| 35392 | Decalcomania—"RCA Victor" decal |
| 35463 | Decalcomania—"Range" decal |
| 35462 | Decalcomania—"Television — Radio — Victrola" decal |
| 35457 | Dial—Glass dial scale |
| 35455 | Escutcheon—Dial scale and push button escutcheon less dial scale and buttons |
| 35456 | Frame—Dial frame complete less dial scale, station selector indicator, and indicator guide rods |
| 34790 | Indicator—Station selector indicator |
| 35458 | Knob—Range switch knob |
| 35459 | Knob—Tone control knob |
| 35460 | Knob—Tuning knob |
| 35461 | Knob—Volume control and power switch knob |
| 33842 | Marker—Station selector markers |
| 33550 | Screen |
| 34491 | Shaft — Station selector indicator pointer guide shaft |
| 4982 | Spring—Retaining spring for knob, Stock No. 35461 |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 35459, 35460 |
| 30330 | Spring—Retaining spring for knob, Stock No. 35458 |

## Push Button Adjustment

The push-buttons should be adjusted for six favorite stations after the receiver is operating, and has had a brief warm-up period.

Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-button screws in back of the station-marker recesses.
2. Set Accessory-Tone Knob to "Radio" and turn the range selector to "A," so that the "A" band indicator lights up.
3. Press in the tuning knob and accurately tune in the first station.
4. With station accurately tuned in, press in the first push-button and tighten the screw.
5. Place the station marker tab in the recess.
6. Proceed in a similar manner to adjust the remainder of the push-buttons.

## Replacement Parts MODEL T-80

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-416A)** |
| 33620 | Arm—Push arm and cam assembly on tuning unit—less lock screw |
| 33430 | Board—Antenna and ground terminal board |
| 34268 | Cap—Rubber cap for tuning tube |
| 12714 | Capacitor—Air trimmer, 2-12 mmfd. (C10) |
| 33429 | Capacitor—Trimmer capacitor bank, two 4-50 mmfd., three 2-20 mmfd., sections (C3, C5, C6, C9, C11) |
| 32792 | Capacitor—25 mmfd. (C2) |
| 12723 | Capacitor—56 mmfd. (C12) |
| 30904 | Capacitor—100 mmfd. (C19, C20) |
| 12404 | Capacitor—120 mmfd. (C21, C22) |
| 14712 | Capacitor—180 mmfd. (C23) |
| 12694 | Capacitor—220 mmfd. (C14) |
| 30433 | Capacitor—470 mmfd. (C1) |
| 12537 | Capacitor—560 mmfd. (C32) |
| 31433 | Capacitor—560 mmfd. (C7) |
| 31403 | Capacitor—3,300 mmfd. (C8) |
| 31405 | Capacitor—6,000 mmfd. (C13) |
| 5107 | Capacitor—.0025 mfd. (C25) |
| 4838 | Capacitor—.005 mfd. (C24, C26, C29, C33, C35) |
| 4937 | Capacitor—.01 mfd. (C28) |
| 4870 | Capacitor—.025 mfd. (C18) |
| 32787 | Capacitor—.05 mfd. (C17, C34) |
| 33014 | Capacitor—Electrolytic, three 10 mfd., and one 20 mfd. sections (C16, C27, C30, C31) |
| 33508 | Clip—Magic Eye mounting clip and bracket |
| 32821 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32824 | Coil—Oscillator coil (L5, L6, L7) |
| 32635 | Cord—Condenser drive cord |
| 32634 | Cord—Drive cord |
| 32713 | Core—Adjustable core and stud for oscillator coil |
| 33627 | Drum—Condenser drive drum |
| 34267 | Drum—Drive cord drum |
| 33186 | Gear—Volume control knob shaft and gear |
| 33185 | Gear—Volume control gear and hub, with set screws |
| 11891 | Lamp—Dial lamp |
| 33431 | Link—Antenna and ground terminal board link |
| 34041 | Link—Link complete with arm and cam for operating range switch |
| 33628 | Plate—Front guide plate for push arms |
| 13871 | Plug—Eye cable plug |
| 5040 | Plug—Speaker cable plug |
| 33509 | Pulley—Drive cord pulley and bracket (1 pulley) |
| 33510 | Pulley—Drive cord pulleys and bracket (2 pulleys) |
| 33626 | Pulley—Drive pulley |
| 14439 | Resistor—100 ohms, ½ watt (R12) |
| 30735 | Resistor—560 ohms, 1 watt (R8) |
| 12265 | Resistor—6,800 ohms, ½ watt (R17) |
| 14559 | Resistor—10,000 ohms, ½ watt (R11) |
| 33489 | Resistor—15,000 ohms, 2.5 watts (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9, R10, R14, R16) |
| 12013 | Resistor—1 meg., 1/10 watt (R13) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R7, R15) |
| 14343 | Retainer—Retaining ring for volume control knob shaft |
| 34040 | Ring—Retaining ring for tuning shaft |
| 4669 | Screw—No. 8-32 sq. hd. set screw for volume control gear and drum |
| 33621 | Screw—Push arm lock screw |
| 34039 | Shaft—Range switch knob shaft |
| 33624 | Shaft—Tuning condenser drive shaft and washer |
| 34038 | Shaft—Tuning knob shaft with rubber drive roller and pulley assembled |
| 33545 | Shield—Dial lamp shield |
| 31364 | Socket—Dial lamp socket |
| 33514 | Socket—Phonograph and Television socket |
| 31319 | Socket—Tube socket |
| 33544 | Spring—Drive cord tension spring |
| 33623 | Spring—Drive drum cord spring |
| 33622 | Spring—Push arm return spring |
| 34042 | Spring—Spring and pin for range switch shaft |
| 33515 | Spring—Tension spring for spring and pin |
| 33513 | Switch—Range switch (S1, S2) |
| 33511 | Tone Control, Television and Phono switch (S3, S4) |
| 33428 | Transformer—First i-f transformer (L9, L10, C19, C20) |
| 14308 | Transformer—Second i-f transformer (L11, L12, C21, C22, C23, R5) |
| 33619 | Transformer—Power transformer 105-120 volts, 25-60 cycles (T1) |
| 33112 | Transformer—Power transformer 105-120 volts, 50-60 cycles (T1) |
| 31446 | Transformer—Power transformer—Universal—60 cycle (T1) |
| 33512 | Volume control and power switch (R6, S5) |
| 33726 | Washer—"C" washer for spring and pin |
| 34037 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL79-5)** |
| 32907 | Cap—Cone center dust cap |
| 32906 | Coil—Hum neutralizing coil |
| 33547 | Coil—Speaker field coil |
| 5039 | Plug—4-prong male speaker connection plug |
| 33599 | Transformer—Speaker output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33474 | Button—Push button |
| 33552 | Dial—Glass dial scale |
| 33549 | Escutcheon—Dial and push button escutcheon—less buttons and screen |
| 33551 | Frame—Dial frame, holder, and pointer assembled—less dial |
| 33842 | Marker—Station selector call letter markers |
| 33550 | Screen—"Push Button "A" Band" marker screen |
| 30330 | Spring—Retaining spring for knob, Stock No. 33470 |
| 14270 | Spring—Retaining spring for knob, Stock No. 33553 and Stock No. 33471 |
| 4982 | Spring—Retaining spring for knob, Stock No. 33505 |

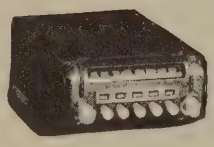
**Additional Replacement Part:**

| Stock No. | |
|---|---|
| 35014 | Mounting—Rubber cushion, spacer, and washers for chassis mounting (4 required) |
| 35441 | Cone—Speaker cone and voice coil |
| 33471 | Knob—Tuning knob |
| 33553 | Knob—Tone control knob |
| 33470 | Knob—Range selector knob |
| 33505 | Knob—Volume control knob |

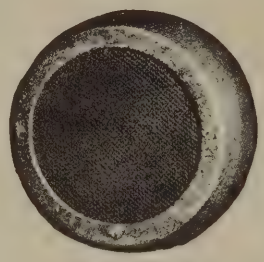
# MODEL M-70

**Chassis No. RC-394**

## Seven-Tube, Push-Button, Superheterodyne Automobile Receiver



RCA Victor M-70.



Model M-70 consists of a 7-tube, superheterodyne automobile receiver and an eight-inch electrodynamic loudspeaker built in two separately housed components. A small tuning unit for mounting under the instrument panel contains four tubes, while the cylindrical loudspeaker housing for firewall mounting contains three tubes.

## Electrical Specifications

RCA Tube Complement

(1) RCA-6K7 ..... R-F Amplifier
(2) RCA-6A8 ..... First Detector—Oscillator
(3) RCA-6SK7 ..... I-F Amplifier
(4) RCA-6R7 ..... Second Det., A-F Amp., and A.V.C.
(5) RCA-6V6-G ..... Power Output
(6) RCA-6V6-G ..... Power Output
(7) RCA-0Z4-G ..... Rectifier

Tuning Range ..... 550 to 1,550 kc

Intermediate Frequency ..... 260 kc

Power Output Ratings

Maximum ..... 8 watts
Undistorted ..... 6 watts

Loudspeaker

Type ..... Electrodynamic
Voice-Coil Impedance ..... 3 ohms at 400 cycles

Power Supply Rating

Supply Voltage ..... 6.3 volts
Current Drain ..... 8.7 amperes
Fuse Protection ..... 15 ampere

Pilot Lamp ..... Mazda No. 51, 6-8 volts, 0.2 ampere

## Mechanical Specifications

Receiver Case Dimensions ..... Height, 2½ inches; Width, 5⅞ inches; Depth, 9¼ inches

Speaker Case Dimensions ..... Diameter, 9½ inches; Depth, 5 inches

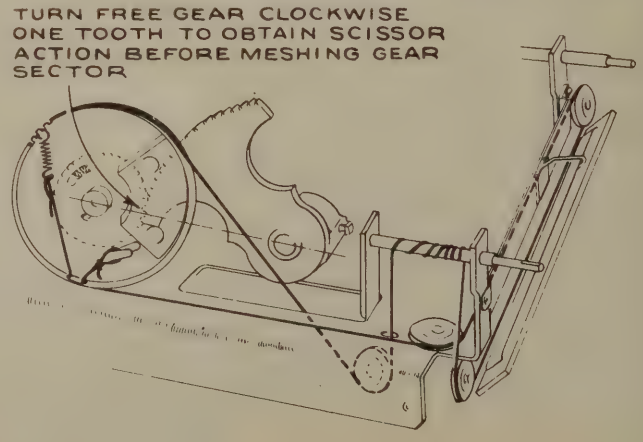
Operating Controls ..... (Left)—(Plastic Knob) Power-Volume; (Wing Knob) Tone; (Center)—Five Station Push Buttons; (Right)—Manual Tuning; Ratio 7½ - 1.

Weight ..... Net, 20 pounds; Shipping, 22 pounds

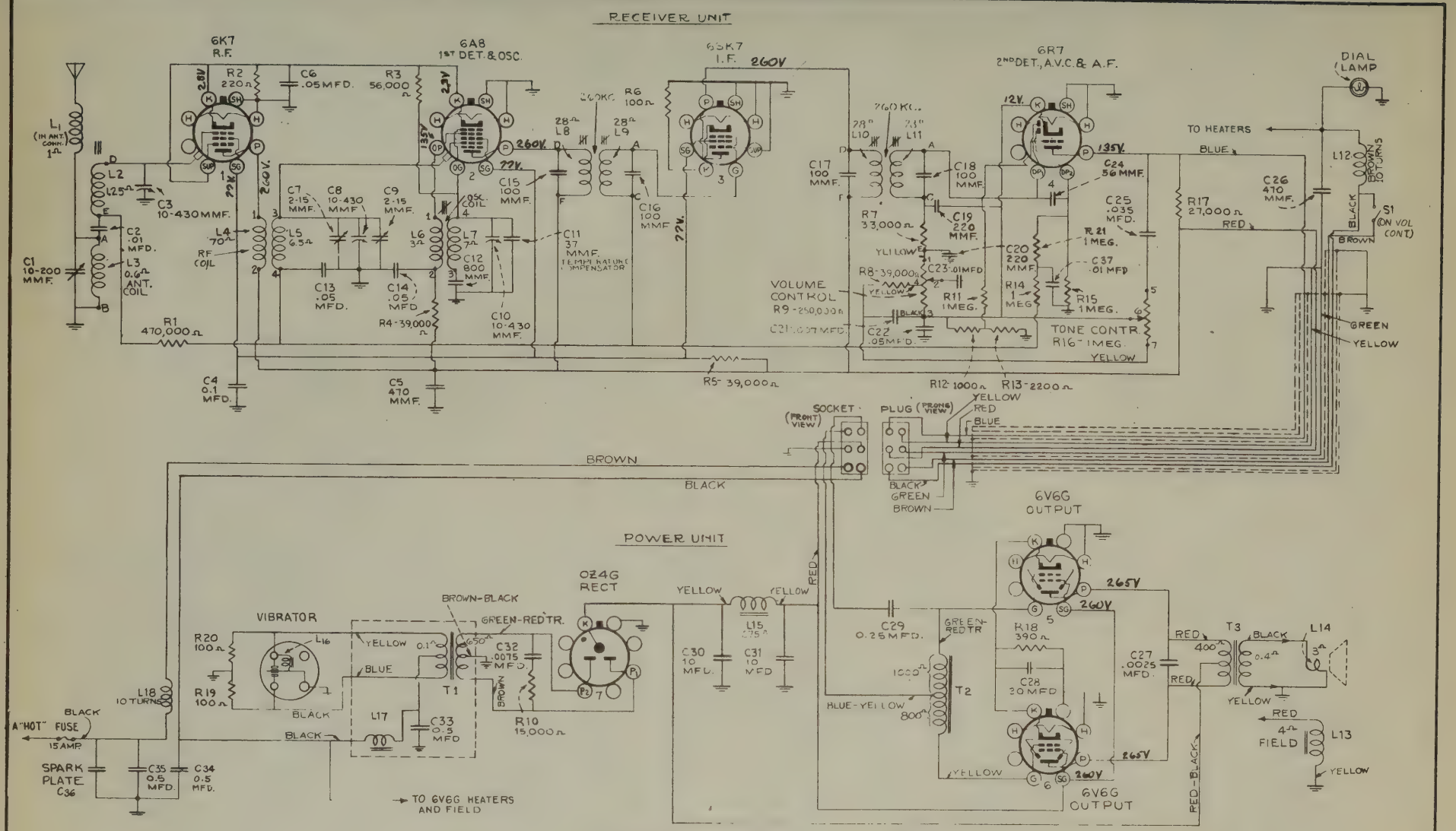
## Adjustment of Push-Button Mechanism

The mechanism should be adjusted so that when using either manual or push-button tuning, it operates positively and without backlash or bind. The following hints will be found helpful in adjusting the mechanism properly.

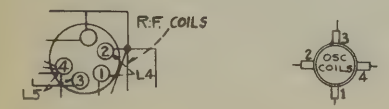
1. With the gang condenser in full mesh, the sector gear should have the two end teeth fully meshed in the scissor gear, as shown in the illustration.
2. The position of the sector gear on the rocker-plate shaft should be adjusted so that there is clearance between the rocker-plates and the frame of the push-button mechanism at both extremities of gang rotation. Thus correct adjustment prevents the rotation of the gang being limited by the rocker plates touching the frame.
3. The drive cord should have 6½ turns around the tuning shaft as shown in the illustration. Three degrees of adjustment of the tension on the drive cord may be obtained by use of the three positions for connecting the drive-cord-tension spring to the drive-cord drum on the condenser shaft as shown.
4. The push-arms, rocker-plate shaft, and pulleys should be lubricated with light grease (sparingly). Care should be taken to keep the lubricant off of the drive cord.




*Drive Cord Hookup*

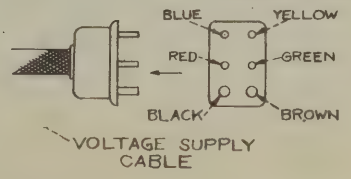


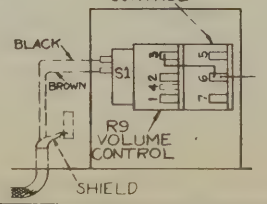

*Schematic Circuit Diagram*










## CATHODE CURRENTS

| | |
|---|---|
| (1) 6K7 | 4.0 MA. |
| (2) 6A8 | 7.0 " |
| (3) 6SK7 | 9.0 " |
| (4) 6R7 | 4.0 " |
| (5) 6V6-G | 23.0 " |
| (6) 6V6-G | 23.0 " |
| (7) OZ4-G | 70.0 " |

# Alignment Procedure

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output signal as low as possible to avoid a-v-c action.

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are as follows: Vertical "H1" to terminal "C" on 2nd I-F transformer; vertical "0" to chassis.

**Output Meter.** — Connect the output meter across the speaker voice-coil and turn the receiver volume control to maximum (fully clockwise) and tone control to middle of range.

**Dial Calibration.**—Rotate the gang condenser to its full-mesh (maximum-capacity) position and then adjust dial scale so that the pointer is aligned to the last calibration mark at the low-frequency end of the scale.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid (No. 4 pin) in series with .01 mfd. | 260 kc | No Signal 550-750 kc | L10 and L11 (2nd I-F Trans.) |
| 2 | 6A8 Det. grid cap in series with .01 mfd. | 260 kc | | L8 and L9 (1st I-F Trans.) |
| 3 † | * Ant. connector in series with 60 mmfd. | 600 kc | 600 kc | L7 (osc.) |
| 4 † | * Ant. connector in series with 60 mmfd. | 1,400 kc | 1,400 kc signal | C7 (det.) C1 (ant.) |
| 5 † | * Ant. connector in series with 60 mmfd. | 600 kc | 600 kc (rock) | L7 (osc.) |
| 6 † | * Ant. connector in series with 60 mmfd. | 1,400 kc | 1,400 kc signal | C7 (det.) C1 (ant.)** |

* **Note 1.**—This 60 mmfd. capacitor must be inserted at the antenna connector of the receiver. The lead from the test oscillator to the 60 mmfd. capacitor may be shielded if desired, but no shielding should be used between capacitor and antenna connector.

† **Note 2.**—These adjustments should be made with unit enclosed in its shielded case, through holes provided for adjustment purposes.

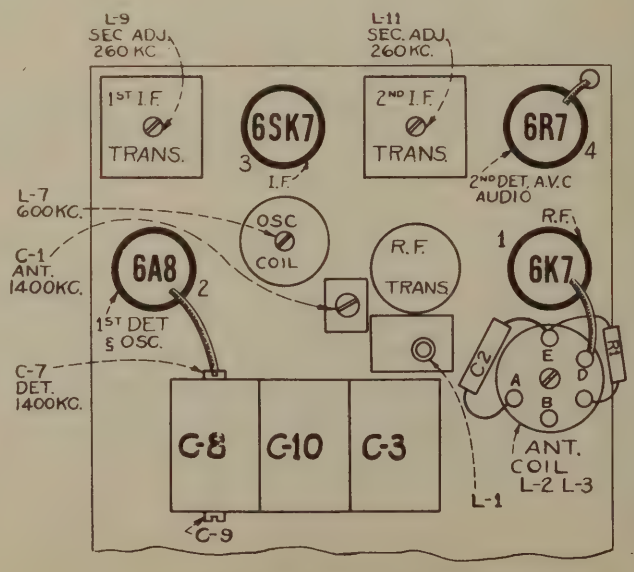
** **Note 3.**—Final adjustment of C1 must be made after the receiver has been installed and the antenna connected. See "Antenna Circuit."

## Antenna Circuit

**It is very important that these instructions be followed when installing the M-70 receiver.**

The antenna circuit is designed to work with an antenna having a total capacity including the shielded lead-in not to exceed 150 mmf. If an antenna having a larger capacity is to be used, it will be necessary to add a capacitor in series with the lead from the antenna filter L-1 to the antenna coil terminal ("A"). Where a "Double Under the Running Board" type of antenna is to be used having a capacity of approximately 200 mmf., the capacitor added should be approximately 500 mmf. The insulated running board type having an approximate capacity of 550 mmf. will require a capacitor of approximately 150 mmf. Cars using an insulated steel top of approximately 3,500 mmf. will require a series capacitor of 150 mmf.

After installation and with antenna connected, tune in a weak station near 1,400 kc and adjust compensator trimmer C-1 for maximum signal output. This trimmer is accessible by removing plug button near antenna jack on top of receiver. If a maximum (peak) signal output cannot be obtained in the range of the antenna trimmer, the effective capacity should be checked and compensated for by varying series capacity as described above.




*Receiver Unit, Tubes and Trimmers*

## Push Button Adjustment

The push buttons should be adjusted for five favorite stations after the receiver is installed and operating.

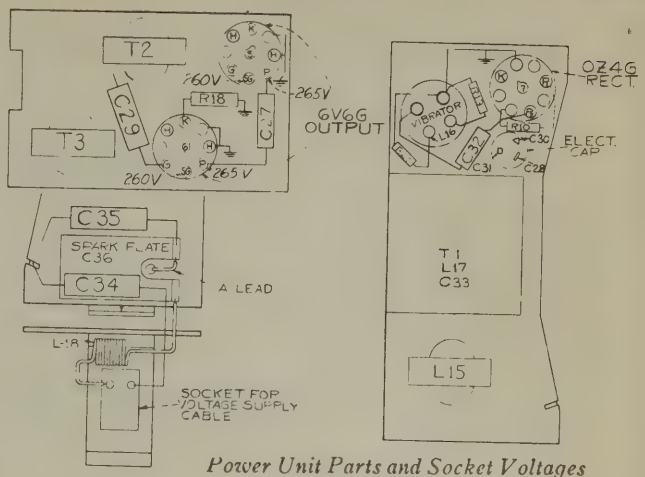
Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push buttons one-half turn.
2. Using the tuning control, accurately tune in the first station.
3. With station accurately tuned in, press the first push button fully in and then gently release so as not to jar mechanism.
4. Tighten the push button securely with fingers. Do not force with pliers.
5. Proceed in same manner to adjust the other four push buttons.

**Push-Arm Inserts:**

Special push-arm inserts are now available to take care of stripped threads on the push button mechanism in these models.

**Stock No. 36161** Insert is for use in Models M-50, M-60, and M-70.




*Power Unit Parts and Socket Voltages*

**Additional Replacement Part:**

Stock No.
35253 Power cable and plug.....

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-394)** |
| 32973 | Button—Push button |
| 32979 | Capacitor—Adjustable trimmer, 15-150 Mmfd. (C1) |
| 31728 | Capacitor—37 Mmfd. (C11 temperature compensating) |
| 12723 | Capacitor—56 Mmfd. (C24) |
| 30904 | Capacitor—100 Mmfd. (C15, C16, C17, C18) |
| 12694 | Capacitor—220 Mmfd. (C19, C20) |
| 30433 | Capacitor—470 Mmfd. (C5, C26) |
| 33052 | Capacitor—800 Mmfd. (C12) |
| 5148 | Capacitor—.007 Mfd. (C21) |
| 14393 | Capacitor—.01 Mfd. (C2, C37) |
| 4937 | Capacitor—.01 Mfd. (C23) |
| 5196 | Capacitor—.035 Mfd. (C25) |
| 32787 | Capacitor—.05 Mfd. (C6, C13, C14, C22) |
| 4839 | Capacitor—0.1 Mfd. (C4) |
| 31601 | Coil—Antenna coil—less shield (L2, L3) |
| 31977 | Coil—Antenna choke coil (L1) |
| 32977 | Coil—Oscillator coil—less shield (L6, L7) |
| 32978 | Control — Volume control, tone control, and power switch (R9, R16, S1) |
| 31600 | Coil—R.F. coil—less shield (L4, L5) |
| 32974 | Condenser—3-gang variable tuning with gear (C3, C7, C8, C9, C10) |
| 32634 | Cord—Drive cord |
| 32975 | Dial—Dial scale only—less frame |
| 32982 | Drum—Variable condenser drive drum |
| 32976 | Frame—Dial scale frame and holder |
| 32290 | Gear—Tuning unit gear sector |
| 32985 | Indicator—Dial indicator pointer |
| 11765 | Lamp—Dial lamp |
| 32981 | Pulley—Drive cord pulley (1) and bracket |
| 32980 | Pulley—Drive cord pulleys (2) and bracket |
| 14439 | Resistor—100 ohms, ½ watt (R6) |
| 14561 | Resistor—220 ohms, ½ watt (R2) |
| 14720 | Resistor—1,000 ohms, ½ watt (R12) |
| 13716 | Resistor—2,200 ohms, ½ watt (R13) |
| 30409 | Resistor—27,000 ohms, ½ watt (R17) |
| 12454 | Resistor—33,000 ohms, ½ watt (R7) |
| 12266 | Resistor—39,000 ohms, ½ watt (R4, R8) |
| 30434 | Resistor—39,000 ohms, 1 watt (R5) |
| 12286 | Resistor—56,000 ohms, ½ watt (R3) |
| 12285 | Resistor—470,000 ohms, ½ watt (R1) |
| 13730 | Resistor—1 Meg., ½ watt (R11, R14, R15, R21) |
| 13471 | Ring—Retaining ring for antenna coil shield |
| 3584 | Ring—Retaining ring for R.F. coil |
| 14350 | Screw—No. 8-32 x 3/16 sq. hd. set screw for drum |
| 31482 | Screw—No. 8-32 x ¼ sq. hd. set screw for gear sector |
| 32983 | Shaft—Tuning knob shaft |
| 32302 | Shield—Antenna coil shield |
| 12883 | Shield—Oscillator coil shield |
| 32984 | Slide—Dial pointer slide rail |
| 31364 | Socket—Dial lamp socket |
| 32299 | Socket—Octal base tube socket |
| 30585 | Spring—Push button arm spring |
| 31615 | Spring—Drive cord tension spring |
| 32990 | Transformer—First I.F. transformer (L8, L9, C15, C16) |
| 32991 | Transformer—Second I.F. transformer (L10, L11, C17, C18) |
| 32972 | Tuner — Tuning mechanism — comprising push arms, and cam plates, assembled in metal frame—less push buttons |
| 2917 | Washer—"C" washer for tuning shaft |
| | **POWER UNIT ASSEMBLY** |
| 32240 | Capacitor—Electrolytic—2 sections 10 mfd., one section 20 Mfd. (C28, C30, C31) |
| 5107 | Capacitor—.0025 Mfd. (C27) |
| 30626 | Capacitor—.0075 Mfd. (C32) |
| 30965 | Capacitor—0.25 Mfd. (C29) |
| 12741 | Capacitor—0.5 Mfd. (C34, C35) |
| 30641 | Lead—"A" lead complete with male section of fuse holder |
| 33064 | Reactor—Filter reactor (L15) |
| 30540 | Resistor—100 ohms, ½ watt (R19, R20) |
| 31388 | Resistor—390 ohms, 1 watt (R18) |
| 12695 | Resistor—15,000 ohms, ½ watt (R10) |
| 13686 | Socket—4-contact vibrator socket |
| 33063 | Socket—6-contact socket for power cable |
| 32299 | Socket—Octal base tube socket |
| 32243 | Transformer—Driver transformer (T2) |
| 32241 | Transformer—Output transformer (T3) |
| 32986 | Transformer—Vibrator power transformer (T1, L17, C33) |
| 13688 | Vibrator—Plug-in unit (L16) |
| | **SPEAKER ASSEMBLIES** |
| 32988 | Case—Speaker and power unit case—less screen |
| 33017 | Cone—Speaker cone and voice coil (L14) |
| 32989 | Screen—Speaker case grille and screen |
| 12252 | Screw—No. 8 x ¼ self-tapping screw for speaker case |
| 32987 | Speaker unit only (L13, L14) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32755 | Button—Plug button for receiver case |
| 5025 | Capacitor—Generator capacitor, .5 Mfd. |
| 32992 | Case—Receiver case—less push button escutcheon |
| 4291 | Clip—Ammeter clip |
| 31456 | Cover—8 celluloid covers for station call letter markers |
| 32994 | Escutcheon—Push button escutcheon |
| 5023 | Fuse—15 amperes |
| 4290 | Insulator—Fuse insulator sleeve |
| 32996 | Knob—Dummy knob |
| 32995 | Knob—Tone control and switch knob |
| 32993 | Knob—Volume control, or tuning knob |
| 7766 | Lead—Ammeter lead and clip |
| 31589 | Marker—Push button station marker |
| 32998 | Mounting—Complete set of hardware for mounting speaker unit |
| 32997 | Mounting—Complete set of hardware for mounting receiver unit |
| 32317 | Screw—No. 8-32 x 7/32 set screw for volume control or tuning knob |
| 12252 | Screw—No. 8 x ¼-in. lg. self-tapping screw for speaker case |
| 5024 | Suppressor—Distributor suppressor |
| 32769 | Washer—Felt washer for under knob |

# MODEL 86T6

## Six-Tube, Electric-Tuning, Three-Band, A-C, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "Medium Wave" (B) | 2,300-7,000 kc |
| "Short Wave" (C) | 7,000-22,000 kc |
| Six Electric Tuning Positions | 540-1,550 kc |

R-F ALIGNMENT FREQUENCIES

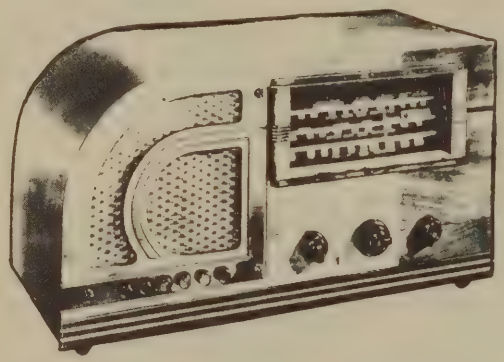
| | |
|---|---|
| "Medium Wave" (B) | 6,000 kc (osc., ant.) |
| "Short Wave" (C) | 20,000 kc (osc.) |
| "Standard Broadcast" (A) | 600 kc (osc.), 1,500 kc (osc.) |
| Six Electric Tuning Positions | Desired Station (osc., ant.) |

Intermediate Frequency ..... 455 kc

RADIOTRON COMPLEMENT

| | | | |
|---|---|---|---|
| (1) RCA-6A8-G | First Detector and Oscillator | (4) RCA-6F5 | Audio Voltage Amplifier |
| (2) RCA-6K7 | I-F Amplifier | (5) RCA-6F6 | Audio Power Amplifier |
| (3) RCA-6H6 | Second Detector and A.V.C. | (6) RCA-5W4 | Full-Wave Rectifier |

Pilot Lamps (2) ..... Mazda No. 46, 6.3 volts, 0.25 amp.



POWER SUPPLY RATINGS

| | |
|---|---|
| Rating A—105-125 volts, 50-60 cycles | 75 watts |
| Rating B—105-125 volts, 25-60 cycles | 75 watts |
| Rating C—100-130/200-250 volts, 50-60 cycles | 75 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 6-inch Electrodynamic |
| Voice coil impedance at 400 cycles | 2.5 ohms—84091—1<br>4.7 ohms—84091—2 |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 2.2 watts |
| Maximum | 4.5 watts |

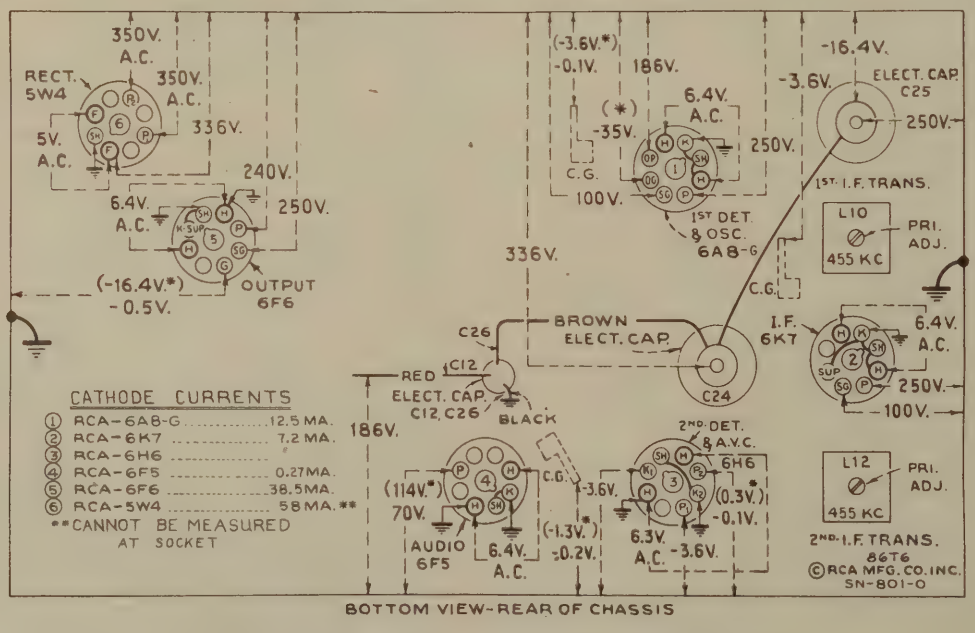



*Figure 1—Radiotron Socket Voltages and Trimmer Locations*

Measured at 117 volts, 60-cycle supply—Tuned to approximately 1,000 kc ("Standard Broadcast")—No signal being received—Volume control minimum—Tone control optional

***Note: Two voltage values are shown for some readings. The value shown in parentheses with asterisk (*) indicates operating conditions without voltmeter loading. The other value (generally lower) is the actual measured voltage and differs from the value shown in parentheses because of the additional loading of the voltmeter through the high series circuit resistance.***

Voltage values as specified should hold within ±20% when the receiver is normally operative at its rated line voltage. To duplicate the conditions under which the voltages were measured requires a 1,000-ohm-per-volt d-c meter, having ranges of 10, 50, 250, and 500 volts. Use the nearest range above the specified measured voltage. A-c voltages were measured with a corresponding a-c meter.

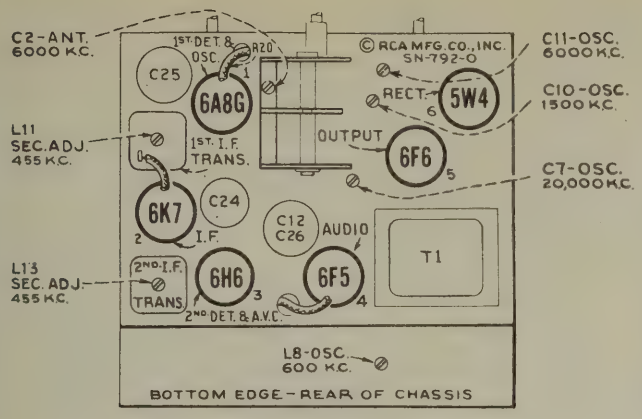



*Figure 2—Radiotron, Component Part, and Trimmer Locations*

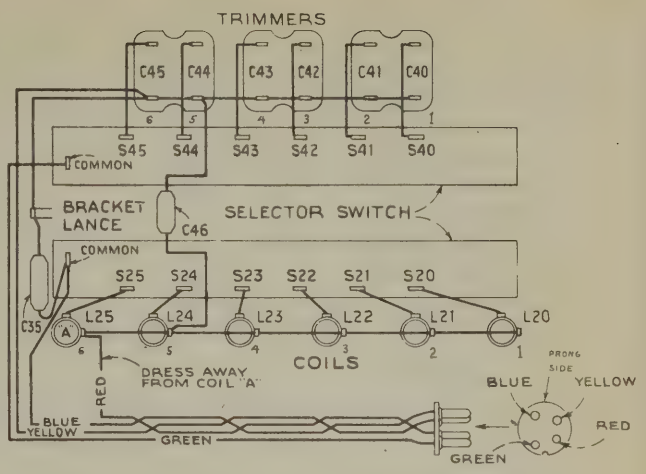



*Figure 3—Wiring Diagram of Electric Tuning Unit*

## Alignment Procedure

With the gang tuning-condenser plates in full-mesh position, adjust the pointer to the low-frequency (end) calibration mark on the dial scale. The pointer is soldered in place on the drive cable.

Connect the "low" output terminal of the test oscillator to the receiver "G" (ground) terminal for all alignment operations. Regulate the output of the test oscillator so that minimum signal is applied to the receiver to obtain an observable output indication. This will avoid a-v-c action.

The term "Dummy antenna" means the device which must be connected between the "high" test-oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator.

For further details on alignment, refer to booklet "RCA Victor Receiver Alignment."

**Precautionary Lead Dress.**—(1) 6F5 grid lead should be dressed away from adjacent electrolytic, C-12. (2) Leads from push-button socket on side apron must be twisted and dressed away from chassis. Maintain original length, size, and position of: (3) C-band antenna lead; (4) Antenna series condenser, C-1, lead; (5) C-band oscillator leads to range switch and chassis; (6) Oscillator plate lead to range switch.

## Adjustments for Electric Tuning

Each push-button connects a particular oscillator coil and antenna trimmer condenser. The tuning of this coil and this condenser selects a station. Clockwise rotation of cores or trimmer screws lowers frequency.

The frequency ranges for various push-buttons are:

No. 1 540 to 1,160 kc — Adjust L-20 and C-40.
No. 2 540 to 1,160 kc — Adjust L-21 and C-41.
No. 3 600 to 1,265 kc — Adjust L-22 and C-42.
No. 4 600 to 1,265 kc — Adjust L-23 and C-43.
No. 5 785 to 1,550 kc — Adjust L-24 and C-44.
No. 6 785 to 1,550 kc — Adjust L-25 and C-45.

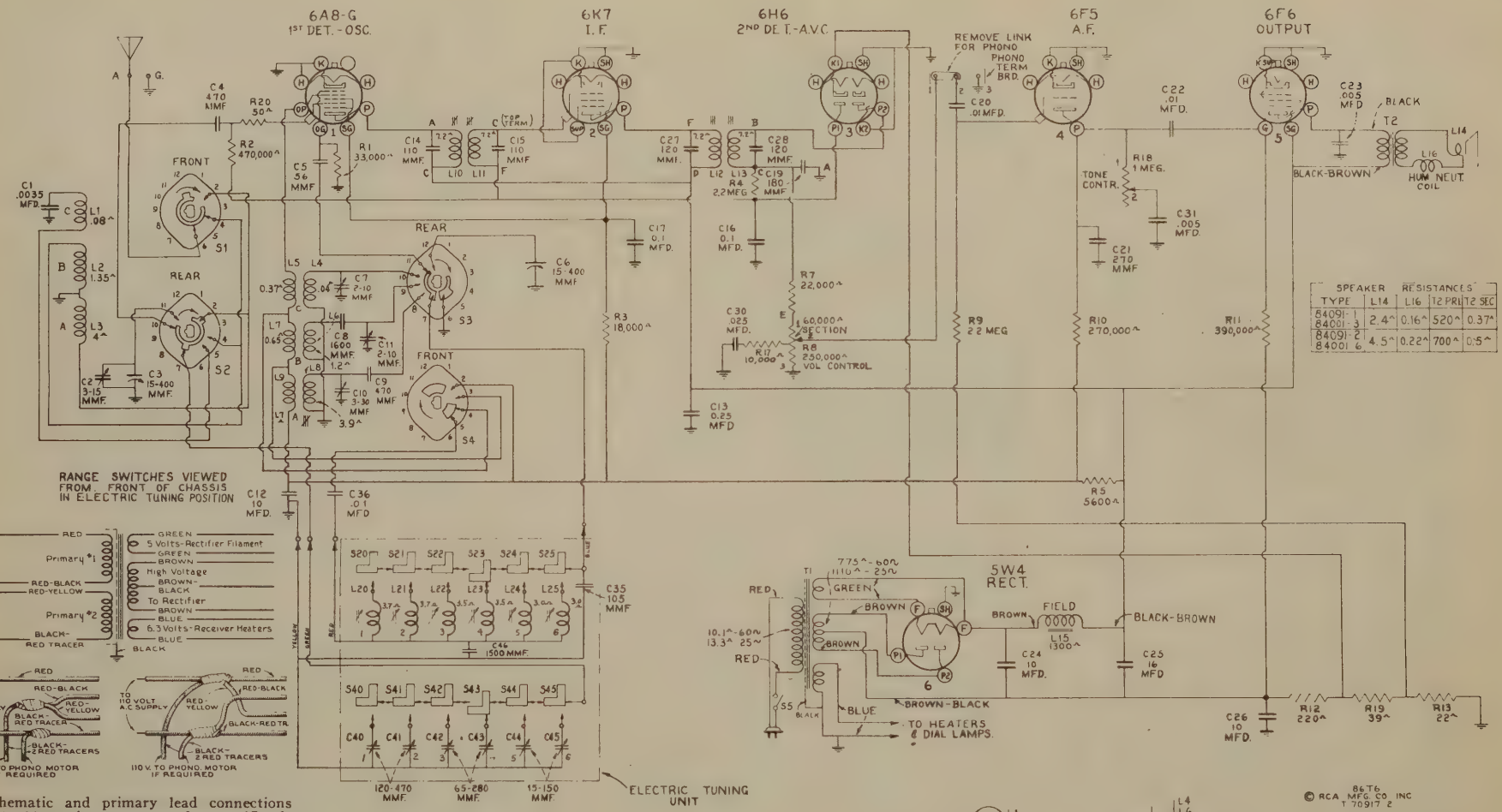
| Order of Alignment | Test Oscillator | | | Range Selector | Receiver Dial Setting | Circuit to Adjust | Adjustment Symbols | Adjust to Obtain |
|---|---|---|---|---|---|---|---|---|
| | Connection to Receiver | Dummy Antenna | Frequency Setting | | | | | |
| 1 | 6K7 I-F Grid Cap | .001 Mfd. | 455 kc | "A" Left | No Signal 550-750 kc | 2nd I-F Trans. | L12 and L13 | Max. (peak) |
| 2 | 6A8 Det. Grid Cap | .001 Mfd. | 455 kc | "A" | No Signal 550-750 kc | 1st I-F Trans. | L10 and L11 | Max. (peak) |
| 3 | Ant. Term. | 300 Ohms | 6,000 kc | "B" Center | 6.0 mc | "B" Osc. | C11 | Max. (peak)* |
| 4 | Ant. Term. | 300 Ohms | 6,000 kc | "B" | 6.0 mc | "B" Ant. | C2 | Max. (peak)† |
| 5 | Ant. Term. | 300 Ohms | 20,000 kc | "C" Right | 20.0 mc | "C" Osc. | C7 | Max. (peak)‡ |
| 6 | Ant. Term. | 200 Mmfd. | 600 kc | "A" | 600 kc | "A" L-F Osc. | L8 | Max. (peak) |
| 7 | Ant. Term. | 200 Mmfd. | 1,500 kc | "A" | 1,500 kc | "A" H-F Osc. | C10 | Max. (peak) |
| 8 | Ant. Term. | 200 Mmfd. | 600 kc | "A" | 600 kc | "A" L-F Osc. | L8 | Max. (peak) |
| 9 | Ant. Term. | 200 Mmfd. | 1,500 kc | "A" | 1,500 kc | "A" H-F Osc. | C10 | Max. (peak) |
| 10 | Set up electric tuning as outlined under "Adjustments for Electric Tuning." | | | | | | | |

* Use minimum capacity peak if two peaks can be obtained.

† After this adjustment, check for image signal by shifting receiver dial to 5.09 mc.

‡ Use maximum capacity peak if two peaks can be obtained. After this adjustment, check for image signal by shifting receiver dial to 20.91 mc.

Note that the heterodyne oscillator tracks above the signal frequency on bands "A" and "B," and below the signal frequency on band "C."




Schematic and primary lead connections for 110-220 volt power transformer (Stock No. 30607). Resistance of each primary winding, 10 ohms: High-voltage secondary winding, 386 ohms total.

*Schematic Circuit Diagram*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 14380 | Arm—Hub and arm for operating band indicator shutter—fastens on range switch shaft |
| 14352 | Belt—Station selector drive belt |
| 13216 | Board—Antenna and ground terminal board |
| 12717 | Board—Phonograph terminal board |
| 12607 | Cap—Top shield cap for first I.F. transformer |
| 12581 | Cap—Top shield cap for second I.F. transformer |
| 11350 | Cap—Grid contact cap |
| 12723 | Capacitor—56 Mmfd. (C5) |
| 14262 | Capacitor—110 Mmfd. (C14, C15) |
| 12404 | Capacitor—120 Mmfd. (C27, C28) |
| 12406 | Capacitor—180 Mmfd. (C19) |
| 12488 | Capacitor—270 Mmfd. (C21) |
| 30433 | Capacitor—470 Mmfd. (C4, C9) |
| 30592 | Capacitor—1,600 Mmfd. (C8) |
| 30303 | Capacitor—.0035 Mfd. (C1) |
| 4838 | Capacitor—.005 Mfd. (C23, C31) |
| 14393 | Capacitor—.01 Mfd. (C20, C22) |
| 4858 | Capacitor—.01 Mfd. (C36) |
| 4870 | Capacitor—.025 Mfd. (C30) |
| 4839 | Capacitor—0.1 Mfd. (C16, C17) |
| 12484 | Capacitor—0.25 Mfd. (C13) |
| 11203 | Capacitor—10 Mfd. (C24) |
| 30577 | Capacitor Pack—Comprising two sections each 10 Mfd. (C12, C26) |
| 5212 | Capacitor—16 Mfd. (C25) |
| 4358 | Clamp—Mounting clamp for capacitor pack, Stock No. 30577 |
| 30578 | Coil—Antenna coil (L1, L2, L3) |
| 30579 | Coil—Oscillator coil (L4, L5, L6, L7, L8, L9) |
| 30573 | Condenser—2-gang variable tuning condenser (C2, C3, C6) |
| 30580 | Condenser—3-gang mica trimmer—two sections each 2-10 Mmfd., one section 3-30 Mmfd. (C7, C10, C11) |
| 30586 | Cord—Station-selector indicator pointer cord |
| 12800 | Core—Adjustable core and stud for oscillator coil |
| 12006 | Core—Adjustable core and stud for I.F. transformer |
| 30589 | Dial—Station-selector dial scale |
| 31026 | Disc—Band indicator disc, complete with operating hub and arm, and connecting link |
| 30572 | Drive—Vernier drive shaft and pinion gear for variable condenser |
| 30584 | Drum—Station-selector drive-cord drum with set screws |
| 30583 | Indicator—Station-selector indicator pointer and holder assembly |
| 5226 | Lamp—Dial lamp |
| 30587 | Pulley—Drive-belt pulley for condenser shaft |
| 14636 | Pulley—Drive-belt idler pulley |
| 14525 | Resistor—22 ohms, carbon type, ½ watt (R13) |
| 30590 | Resistor—39 ohms, carbon type, ½ watt (R19) |
| 30771 | Resistor—50 ohms, flexible type, 1/10 watt (R20) |
| 30591 | Resistor—220 ohms, insulated wire wound, 1.1 watt (R12) |
| 11298 | Resistor—5,600 ohms, carbon type, 1 wat. (R5) |
| 14559 | Resistor—10,000 ohms, insulated, ½ watt (R17) |
| 30151 | Resistor—18,000 ohms, insulated, 1 watt (R3) |
| 14284 | Resistor—22,000 ohms, carbon type, 1/10 watt (R7) |
| 12454 | Resistor—33,000 ohms, insulated, ½ watt (R1) |
| 11323 | Resistor—270,000 ohms, carbon type, ½ watt (R10) |
| 13005 | Resistor—390,000 ohms, carbon type, 1/10 watt (R11) |
| 11452 | Resistor—470,000 ohms, carbon type, 1/10 watt (R2) |
| 12679 | Resistor—2.2 meg., insulated, ½ watt (R4, R9) |
| 14887 | Retainer—Band-indicator disc retainer |
| 14343 | Ring—Retaining ring for range switch shaft |
| 14350 | Screw—No. 8-32 x 3/16 in. square-head set screw for drum, Stock No. 30584, arm, Stock No. 14380, and pulley, Stock No. 30587 |
| 14340 | Shaft—Drive pulley and knob shaft—fastens on range switch shaft |
| 12008 | Shield—I.F. transformer shield can |
| 11196 | Socket—8-contact Radiotron socket |
| 31027 | Socket—4-contact female socket for electric tuning unit cable plug |
| 14114 | Socket—Dial-lamp socket |
| 12007 | Spring—Retaining spring for core, Stock No. 12006 |
| 30585 | Spring—Tension spring for pointer cord |
| 30588 | Spring—Tension spring for idler pulley |
| 31025 | Switch—Range switch (S1, S2, S3, S4) |
| 30574 | Tone control and power switch (R18, S5) |
| 14376 | Transformer—First I.F. transformer (L10, L11, C14, C15) |
| 14308 | Transformer—Second I.F. transformer (L12, L13, C19, C27, C28, R7) |
| 30571 | Transformer—Power transformer, 105-125 volts, 25-60 cycle (T1) |
| 30607 | Transformer—Power transformer, 105-125 and 200-250 volts, 50-60 cycle (T1) |
| 30575 | Volume Control (R8) |
| | **REPRODUCER ASSEMBLIES** |
| 13677 | Cone—Reproducer cone and dust cap (for speaker marked 84091-1 or 84001-3) (L14) |
| 14934 | Cone—Reproducer cone and dust cap (for speaker marked 84091-2 or 84001-6) (L14) |
| 14613 | Reproducer complete (marked 84001-3 or 6 but interchangeable with speaker marked 84091-1 or 2) |
| 14615 | Transformer—Output transformer (for speaker marked 84091-1 or 84001-3) (T2) |
| 14935 | Transformer—Output transformer (for speaker marked 84091-2 or 84001-6) (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30981 | Button—Push button for electric tuning switch |
| 31029 | Capacitor—Adjustable trimmer 15-150 Mmfd. (C44, C45) |
| 30764 | Capacitor—Adjustable trimmer 65-280 Mmfd. (C42, C43) |
| 30765 | Capacitor—Adjustable trimmer 120-470 Mmfd. (C40, C41) |
| 31032 | Capacitor—105 Mmfd. (C35) |
| 13762 | Capacitor—1,500 Mmfd. (C46) |
| 30747 | Coil—Electric tuning oscillator coil (L24, L25) |
| 30748 | Coil—Electric tuning oscillator coil (L22, L23) |
| 30749 | Coil—Electric tuning oscillator coil (L20, L21) |
| 30846 | Core—Adjustable core and stud for electric tuning oscillator coils |
| 31095 | Discs—10 celluloid protector discs for call letter markers |
| 30593 | Escutcheon—Dial escutcheon and crystal |
| 14359 | Knob—Station selector knob |
| 14269 | Knob—Tone control, volume control, or range switch knob |
| 31028 | Marker—Station call letter markers for electric tuning push buttons |
| 30550 | Plug—4-prong male plug for electric tuning unit cable |
| 14267 | Screw—Chassis-mounting screw and washer assembly |
| 14270 | Spring—Retaining spring for knob, Stock No. 14269 |
| 4982 | Spring—Retaining spring for knob, Stock No. 14359 |
| 12007 | Spring—Retaining spring for core, Stock No. 30846 |
| 31030 | Switch—Electric tuning station selector switch only—less push buttons (S20, S21, S22, S23, S24, S25, S40, S41, S42, S43, S44, S45) |

ADDITIONAL REPLACEMENT PART

Stock No.

14616 Coil - Field coil for loudspeaker

# MODEL R-89 Three-Tube, A-C, Electric Victrola (Phono. only)

## Electrical and Mechanical Specifications

RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6F5 | Audio Voltage Amplifier |
| (2) RCA-25L6 | Audio Power Output |
| (3) RCA-25Z6 | Rectifier |

LOUDSPEAKER

| | |
|---|---|
| Type | Electrodynamic |
| Voice Coil Impedance | 4.5 ohms at 400 cycles |
| Undistorted | 1.0 watts |
| Maximum | 2.0 watts |

POWER SUPPLY RATING

| | |
|---|---|
| A-5 | 105-125 volts, 50 cycles, 45 watts |
| A-6 | 105-125 volts, 60 cycles, 45 watts |

VICTROLA MECHANISM

| | |
|---|---|
| Motor | Manual Starting Synchronous |
| Turntable Speed | 78 r.p.m. |
| Pickup | Crystal |
| Impedance | 30,000 ohms at 1,000 cycles |

## General Description and Service Data

The model R-89 Electric Victrola consists of a crystal pickup, a three tube audio amplifier, a dynamic speaker, and motor turntable mechanism in a table type walnut veneer cabinet. Any record, up to and including the 12-inch size, may be played on this instrument.

This instrument may also be used to play records through a radio receiver, if so desired. To do this remove shielded lead at rear of cabinet from pickup jack, and plug into shorting jack, and plug lead from radio receiver into pickup jack.

### Phonograph Motor

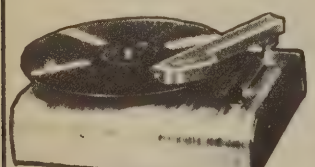
The synchronous motor used in this instrument is designed to be simple and foolproof. The parts that may require attention are plainly shown. The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

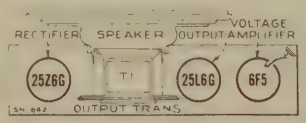
Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

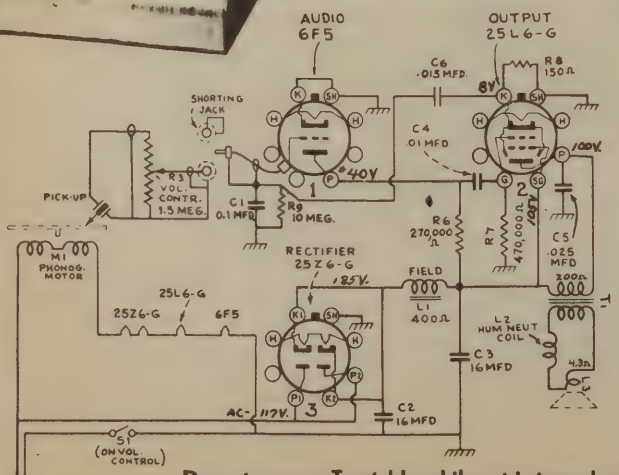
1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.
5. Stator should be free to rotate between limits of damping assembly.

Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

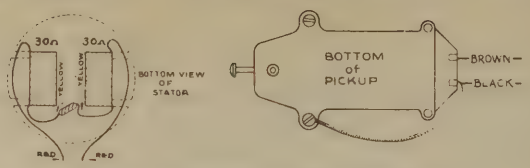
Rotor Adjustment.—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.






**Do not remove Turntable while set is turned on**




### Blocking or Distortion at High Volume:

The amount of reserve amplification provided in this instrument is such that on records having very "heavy" modulation, there may be a tendency to block or produce a choking type of distortion. This condition can be removed by reducing the value of R-9 from 10 megohms to 1 megohm. This resistor is in the grid return circuit of the 6F5. The 1 megohm may be added in multiple with the 10 megohms.

### Circuit Changes:

Capacitor C-5 changed in value from .025 to .015 mfd.

A 330,000 ohm resistor (R10) added across pickup output jack.

These changes are incorporated in later production instruments.

### Additional Replacement Parts:

| Stock No. | |
|---|---|
| 11315 | Capacitor—.015 mfd. (C5) |
| 11297 | Resistor—330,000 ohm, 1/10 watt (R10) |
| 13730 | Resistor—1 meg., ½ watt (R9) |
| 33041 | Ring — Retaining ring and metal washer to mount turntable plate |

## Replacement Parts

| STOCK No. | DESCRIPTION |
|---|---|
| | **AMPLIFIER ASSEMBLIES** |
| 31886 | Cable—Shielded amplifier input cable complete with plug |
| 14393 | Capacitor—.01 mfd. (C4) |
| 11315 | Capacitor—.015 mfd. (C6) |
| 30899 | Capacitor—0.1 mfd. (C1) |
| 31323 | Capacitor—16 mfd. (C2, C3) |
| 13428 | Resistor—150 ohms, ½ watt (R8) |
| 12199 | Resistor—270,000 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 31319 | Socket—Tube socket |
| | **PICKUP AND ARM ASSEMBLIES** |
| 31888 | Base—Pickup arm base and pivot shaft |
| 31050 | Crystal—Pickup crystal and needle screw |
| 31887 | Pickup arm and crystal complete |
| 31745 | Ring—Retaining ring for pickup arm base |
| 12539 | Screw—Pickup needle screw |
| | **MOTOR ASSEMBLIES** |
| 31045 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Bearing assembly |
| 31041 | Cap—Rubber spindle cap |
| 31047 | Cushion—Rubber cushion for bearing |
| 31924 | Motor—60 volt, 50 cycle (M1) |
| 31923 | Motor—60 volt, 60 cycle (M1) |
| 31040 | Mountings—Turntable rubber mountings sufficient for one turntable |
| 32023 | Rotor—Turntable and rotor laminations for 50 cycle motor |
| 31926 | Rotor—Turntable and rotor laminations for 60 cycle motor |
| 32022 | Stator—Stator assembly complete with coils and laminations for 60 volt, for 50 cycle motor |
| 31925 | Stator—Station assembly complete with coils and laminations for 60 volt, for 60 cycle motor |
| 31039 | Turntable—Finished turntable top plate only—less rubber mountings |
| 14231 | Washer—Bearing shim washers |
| 4083 | Washer—Leather washer |
| | **SPEAKER ASSEMBLIES (84202-3)** |
| 31202 | Cone—Speaker cone and voice coil (L3) |
| 31201 | Speaker Complete |
| 31203 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31986 | Cable—Pickup-to-receiver interconnecting cable required when instrument is used as record player only |
| 3961 | Knob—Volume control knob |
| 31053 | Screw—Motor mounting screws, cushions and nuts, sufficient for one motor |
| 14278 | Socket—Amplifier shorting socket or pickup output socket |
| 31889 | Volume control and switch (R3, S1) |

# MODEL R-91

## Four-Tube, A-C, Electric Victrola (Phono. only)

## Electrical and Mechanical Specifications

**RCA Tube Complement**

(1) RCA-6F5 ..... Audio Voltage Amplifier
(2) RCA-25L6 ..... Audio Power Output
(3) RCA-25Z6 ..... Rectifier
(4) RCA-BK61B ..... Ballast Tube

**Power Supply Rating**

A-5 ..... 105-125 volts, 50 cycles, 65 watts
A-6 ..... 105-125 volts, 60 cycles, 65 watts

**Power Output**

Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

**Loudspeaker**

Type ..... Electrodynamic
Voice Coil Impedance ..... 4.9 ohms at 400 cycles

**Motor Board**

Motor ..... Manual Starting Synchronous
Turntable Speed ..... 78 r.p.m.

**Pickup**

Type ..... Crystal
Impedance ..... 80,000 ohms at 1,000 cycles

| | | | | | |
|---|---|---|---|---|---|
| Cabinet Dimensions ..... | Height 9 inches ..... | Width 15-1/18 inches ..... | Depth 13-1/16 inches |
| Chassis Base Dimensions ..... | Height 1⅛ inches ..... | Width 5⅞ inches ..... | Depth 3⅝ inches |
| Weight (Shipping) ..... | 30 pounds | Weight (Net) ..... | 26 pounds |
| Operating Controls ..... | (1) Right Front, Volume; (2) Right Rear, Power-Tone | | |

## General Description and Service Data

The model R-91 Electric Victrola consists of a crystal pickup, a four tube audio amplifier, a five-inch dust-proof dynamic speaker, and a motor turntable mechanism all combined in a hinged-top, table type walnut veneer cabinet. Any record, up to and including the 12-inch size, may be played on this instrument.

The crystal pickup unit is securely sealed in a metal casing, against extreme changes of climate. If failure occurs due to a defective crystal unit, no attempt should be made to repair it, but a new replacement crystal unit should be installed.

### Phonograph Motor

The synchronous motor used in this instrument is designed to be simple and foolproof. The parts that may require attention are plainly shown in figure 2. The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

**Hum and Vibration.**—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.
5. Stator should be free to rotate between limits of damping assembly.

**Removing Rotor.**—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

**Rotor Adjustment.**—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

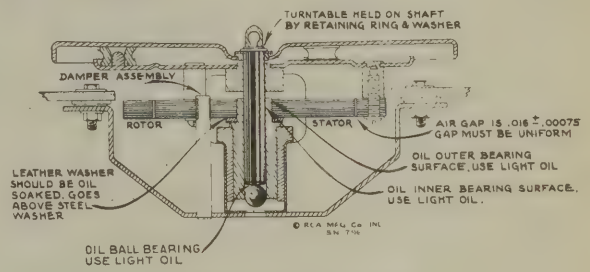
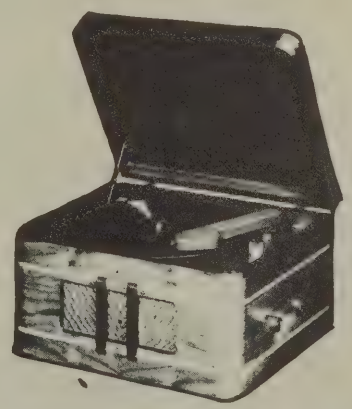

TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .00075 GAP MUST BE UNIFORM
OIL OUTER BEARING SURFACE, USE LIGHT OIL
OIL INNER BEARING SURFACE, USE LIGHT OIL.
LEATHER WASHER SHOULD BE OIL SOAKED. GOES ABOVE STEEL WASHER
OIL BALL BEARING USE LIGHT OIL
© RCA MFG. Co. INC.

*Figure 2—Motor Details*



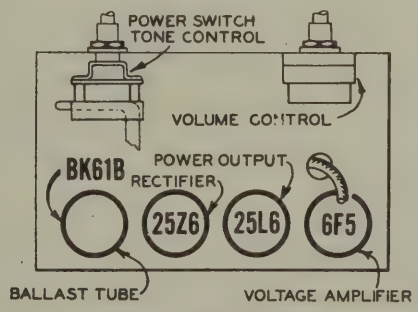



*Figure 3—Tube Layout*

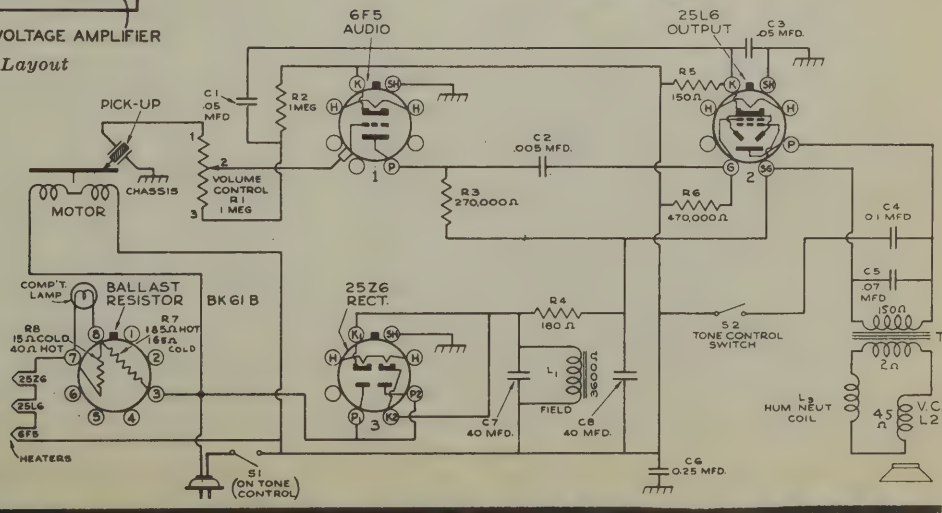
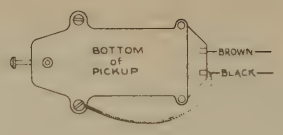


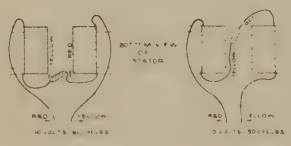

*Figure 4*
*Schematic Diagram*

**Reduction of Rumble:**

It is possible to reduce the mechanical vibration and resultant hum by reversing one of the coils of the stator assembly. This may be done in a simple manner, without disconnecting leads, by removing one coil from the stator, turning it end-for-end, and replacing it on the stator so that its leads are toward the center bearing.

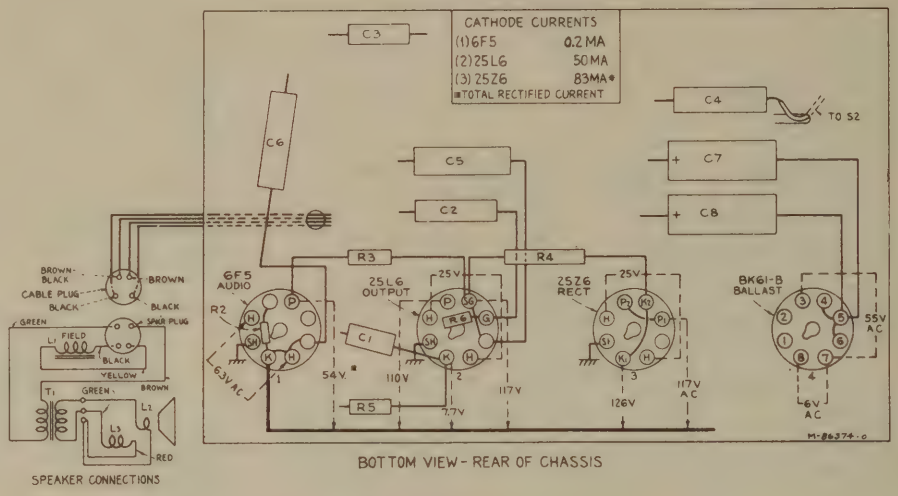



*Pickup Wiring*



*Motor Coil Connections*
D-C resistance of each coil (for 110 volts, 50 and 60 cycles) is approximately 82 ohms

*Figure 5*
*Wiring and Socket Voltages*




BOTTOM VIEW - REAR OF CHASSIS

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

SPEAKER CONNECTIONS

## Replacement Parts

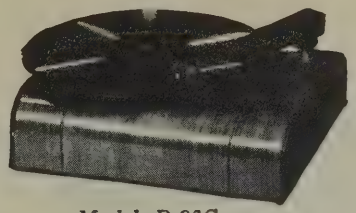
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **AMPLIFIER ASSEMBLIES** |
| 31585 | Ballast—Ballast resistor tube — Type BK61-B (R7, R8) |
| 4287 | Body—Connector shell for phono. input cable |
| 4286 | Bushing—Bushing and ferrule for phono. input cable connector |
| 4838 | Capacitor—.005 mfd. (C2) |
| 30882 | Capacitor—.05 mfd. (C1, C3) |
| 14626 | Capacitor—.07 mfd. (C5) |
| 4839 | Capacitor—0.1 mfd. (C4) |
| 30965 | Capacitor—0.25 mfd. (C6) |
| 31584 | Capacitor—40 mfd. (C7, C8) |
| 31480 | Lamp—Pilot lamp |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact male plug for speaker cable |
| 31585 | Resistor—Ballast resistor tube — Type BK61-B (R7, R8) |
| 30880 | Resistor—150 ohms, ½ watt (R5) |
| 2736 | Resistor—180 ohms, 1 watt (R4) |
| 12199 | Resistor—270,000 ohms, ½ watt (R3) |
| 12285 | Resistor—470,000 ohms, ½ watt (R6) |
| 13730 | Resistor—1 meg., ½ watt (R2) |
| 31365 | Socket—Pilot lamp socket |
| 31319 | Socket—Radiotron socket |
| 4284 | Spring—Tension spring for phono. input cable connector |
| 31583 | Switch—Tone and power switch (S1, S2) |
| 31585 | Tube—Ballast resistor tube — Type BK61-B (R7, R8) |
| 31582 | Volume Control—(R1) |
| 4285 | Washer—Insulating washer for phono. input cable connector |
| | **MOTOR ASSEMBLIES** |
| 31045 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Bearing assembly |
| 31041 | Cap—Rubber spindle cap |
| 31047 | Cushion—Rubber cushion for bearing |
| 31034 | Motor—110 volt, 50 cycle—less mounting (M1) |
| 9841 | Motor—110 volt, 60 cycle—complete with mounting (M1) |

| STOCK No. | DESCRIPTION |
|---|---|
| 31040 | Mountings—Turntable top rubber mountings sufficient for one turntable |
| 31037 | Rotor—Turntable and rotor lamination assembly —complete for 50 cycle operation |
| 31036 | Rotor—Turntable and rotor lamination assembly —complete for 60 cycle operation |
| 31043 | Stator—Stator assembly complete with coils and laminations for 50 cycle operation |
| 31042 | Stator—Stator assembly comprising coils and laminations for 60 cycle operation |
| 31039 | Turntable—Finished turntable top plate only—less rubber mountings |
| 4083 | Washer—Leather washer |
| 14231 | Washer—Metal spacing washer |
| | **PICKUP AND ARM ASSEMBLIES** |
| 31049 | Base—Pickup arm pivot shaft and base assembly |
| 4286 | Bushing—Bushing and ferrule insert for connector cap |
| 4288 | Cap—Pickup cable connector cap |
| 31050 | Crystal—Pickup crystal and needle screw |
| 9842 | Pickup Crystal and arm complete with mounting —less connector |
| 12539 | Screw—Pickup needle screw |
| | **SPEAKER ASSEMBLIES (Speaker 84265-2)** |
| 31587 | Cone—Speaker cone and voice coil (L2) |
| 31586 | Speaker—Complete |
| 31588 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 13103 | Cap—Pilot lamp cap |
| 13085 | Hinge—Cabinet lid hinge |
| 30885 | Knob—Volume control, or tone control knob |
| 31053 | Mounting—Complete set of motor mounting screw assemblies |
| 31054 | Mounting—Pickup arm rubber mounting washer and nut |
| 30870 | Plug—2-contact male plug for motor leads |
| 12993 | Screw—Set screw for knob Stock No. 30885 |
| 31213 | Support—Cabinet lid support |

# MODELS R-93B and R-93C
## Victrola Attachment

*Model R-93B*



*Model R-93C*

The two models are electrically and mechanically similar; they differ in that Model R-93B has a molded plastic cabinet, whereas Model R-93C has a veneer wood cabinet.

## Electrical Specifications

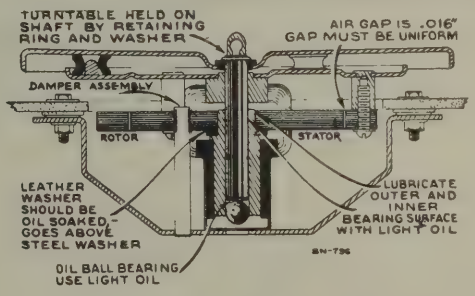
VOLTAGE RATINGS

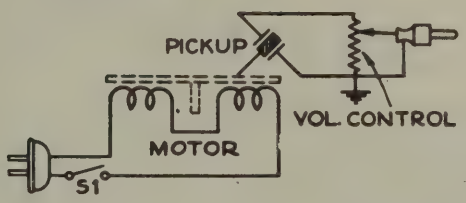
A-6 ..... 105-125 volts, 60 cycles, 9 watts
A-5 ..... 105-125 volts, 50 cycles, 9 watts
B-2 ..... 105-125 volts, 25 cycles, 9 watts
C-5 ..... 200-250 volts, 50 cycles, 9 watts

MOTOR AND PICKUP

Type of Motor ..... Synchronous (Manual Starting)
Turntable Speed ..... 78 r.p.m.
Type Pickup ..... Crystal
Pickup Impedance ..... 80,000 ohms at 1,000 cycles
Average Output Voltage ..... 1½ volts at 1,000 cycles with 250,000 ohm load
Volume Control Resistance ..... 250,000 ohms

**REFER TO MODEL R-93F FOR ADDITIONAL DATA**


TURNTABLE HELD ON SHAFT BY RETAINING RING AND WASHER
AIR GAP IS .016" GAP MUST BE UNIFORM
DAMPER ASSEMBLY
ROTOR
STATOR
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER
LUBRICATE OUTER AND INNER BEARING SURFACE WITH LIGHT OIL
OIL BALL BEARING USE LIGHT OIL
BN-736



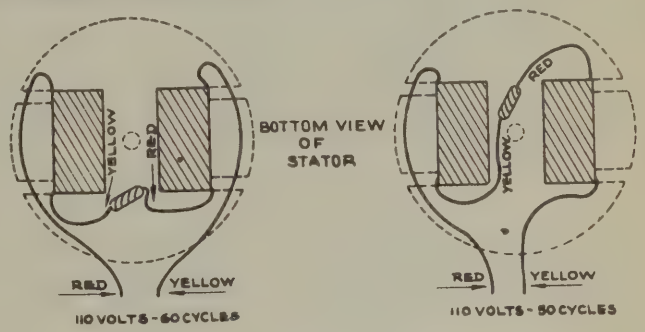




*Figure 3—Motor Coil Assembly and Connections*

**Additional Replacement Parts:**

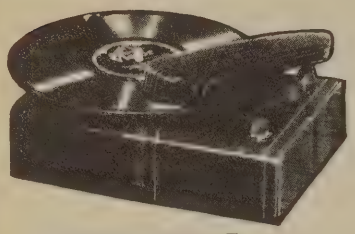
Stock No.
33641 Rotor laminations (60-cycle) only
33642 Wood wedges for stator coils

## REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

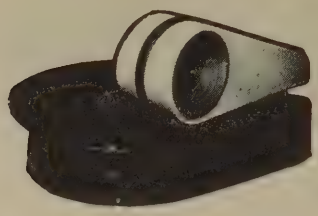
| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES** |
| 31045 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Bearing assembly |
| 31041 | Cap—Rubber spindle cap |
| 31047 | Cushion—Rubber cushion for bearing |
| 31034 | Motor—110 volt, 50 cycle—less mounting (M1) |
| 9841 | Motor—110 volt, 60 cycle—complete with mounting (M1) |
| 31040 | Mountings—Turntable top rubber mountings sufficient for one turntable |
| 31037 | Rotor—Turntable and rotor lamination assembly complete for 50 cycle operation |
| 31038 | Rotor—Turntable and rotor lamination assembly complete for 60 cycle operation |
| 31043 | Stator—Stator assembly complete with coils and laminations for 50 cycle operation |
| 31042 | Stator—Stator assembly comprising coils and laminations for 60 cycle operation |
| 31039 | Turntable—Finished turntable top plate only—less rubber mountings (50-60 cycle only) |
| 4083 | Washer—Leather washer |
| 14231 | Washer—Metal spacing washer |
| | **PICKUP AND ARM ASSEMBLIES** |
| 31050 | Crystal—Pickup crystal and needle screw |
| 9842 | Pickup crystal and arm complete with mounting |
| 12539 | Screw—Pickup needle screw |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31055 | Cabinet—Model R-93B cabinet with bottom cover—less rubber feet |
| 31051 | Foot—Rubber foot for cabinet |
| 3961 | Knob—Volume control knob |
| 31054 | Mounting—Pickup arm mounting nuts, washer, and rubber spacer |
| 31053 | Mounting—Motor mounting screw assembly complete |
| 31048 | Plug—2-contact male plug for output cable |
| 31052 | Volume Control and on-off switch (R1, S1) |

# Models R-93F, R-100 and VICT. JR.#41918 RECORD PLAYERS



MODEL R93-F

MODEL R-100



*RCA Victrola Junior.*

## Electrical and Mechanical Specifications

**MOTOR**

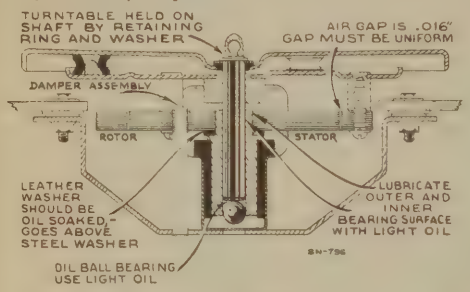
78 r.p.m. ..... Synchronous (Manual Starting)

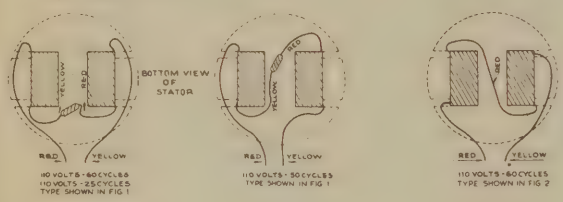
**POWER SUPPLY RATINGS**

| | |
|---|---|
| 105-125 volts, 60 cycles | 10 watts |
| 105-125 volts, 50 cycles | 10 watts |
| 105-125 volts, 25 cycles | 10 watts |

**CRYSTAL PICKUP**

| | |
|---|---|
| Impedance | 100,000 ohms at 1,000 cycles |
| Average Output Voltage | 1¼ volts, at 1,000 cycles Across 250,000 ohms load |


TURNTABLE HELD ON SHAFT BY RETAINING RING AND WASHER
AIR GAP IS .016" GAP MUST BE UNIFORM
DAMPER ASSEMBLY
ROTOR
STATOR
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER
LUBRICATE OUTER AND INNER BEARING SURFACE WITH LIGHT OIL
OIL BALL BEARING USE LIGHT OIL
BN-796

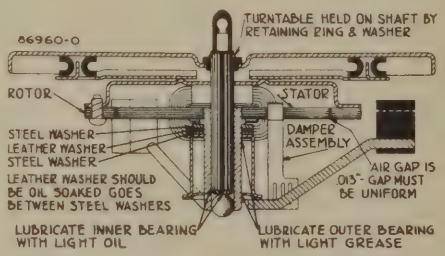


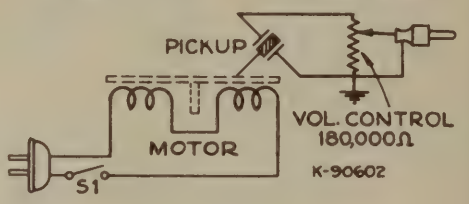

*At Left—Fig. 1*

*At Right—Fig. 2*

*Lower Left—Motor Coil Connections*

*Lower Right—R-100 Schematic Diagram*


86960-0
TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
ROTOR
STATOR
DAMPER ASSEMBLY
STEEL WASHER
LEATHER WASHER
STEEL WASHER
LEATHER WASHER SHOULD BE OIL SOAKED GOES BETWEEN STEEL WASHERS
AIR GAP IS .015" GAP MUST BE UNIFORM
LUBRICATE INNER BEARING WITH LIGHT OIL
LUBRICATE OUTER BEARING WITH LIGHT GREASE




## Motor Data

Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs, it may be due to:

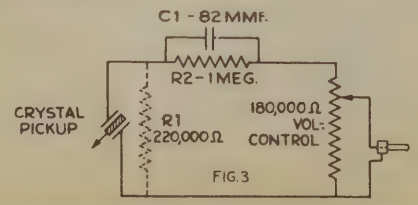
1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make sure that the leather and steel washers are arranged in proper sequence, as shown in the drawings.)
3. Motor not properly fastened in cabinet.
4. Burrs on poles of motor or stator.
5. Slight eccentricity of rotor or spindle.
6. Locse laminations of the stator.
7. Improper horizontal alignment of the rotor and stator (pertaining only to the type motor .shown in Figure 1). Correct horizontal alignment is as shown in the motor assembly drawing. The position of the stator is raised or lowered by adding or removing washers below the leather washer. In the type motor shown in Figure 2, no adjustment is necessary because correct horizontal alignment is provided by the design of the motor.

**The damper spring must fit without binding or chattering, in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. Any binding in the washers or stator bearing which prevents the movement of the stator may cause speed variations in the motor.** The damper spring must exert equal force in restoring the stator to its mid-position when the stator is deflected manually in either direction.

### Tone Compensation

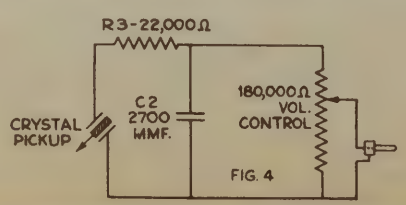
Because of the widely varying frequency characteristics of various types of audio amplifiers with which the Player may be used, it may be desirable in some cases to make refinements in the pickup circuit of the Player to compensate for the characteristics of the amplifier. The following circuits show means of making such refinements.

In Figure 3, R1 controls the low-frequency response; larger values of R1 give increased lows: For maximum low-frequency response, remove R1. R2 controls pickup output, smaller values of R2 giving increased output. C1 controls high-frequency response; to increase highs, increase C1.




Where a decrease in high-frequency response may be desired (for example, as an aid in reducing "needle scratch" on worn records), the circuit in Figure 4 is applicable. In this circuit, C2 acts as loading on the pickup and is also a controlling factor on the high-frequency response. Smaller values of C2 give more pickup output and also more highs, R3 gives a sharper high-frequency reduction; increasing R3 decreases highs.

The suggested values shown in Figures 3 and 4 should serve as a basis from which slight alterations may be made to suit individual cases.



R93F, R100, VICT. JR. #41918

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL R93F** |
| | MOTOR ASSEMBLIES (See Figure 1) (110 volts, 25 cycle) (110 volts, 50 cycle) |
| 31045 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Bearing assembly |
| 31041 | Cap—Rubber spindle cap |
| 31047 | Cushion—Rubber cushion for bearing |
| 32077 | Motor—110 volt, 25 cycle—less mounting |
| 31034 | Motor—110 volt, 50 cycle—less mounting |
| 31040 | Mountings—Turntable top rubber mountings sufficient for one turntable |
| 32073 | Rotor—Turntable and rotor lamination assembly complete for 25 cycle operation |
| 31037 | Rotor—Turntable and rotor lamination assembly complete for 50 cycle operation |
| 32072 | Stator—Stator coil, laminations, and weights for 105-120 volts, 25 cycles |
| 31043 | Stator—Stator assembly complete with coils and laminations for 50 cycle operation |
| 31039 | Turntable—Finished turntable top plate only—less rubber mountings |
| 4083 | Washer—Leather washer |
| 14231 | Washer—Metal spacing washer |
| | MOTOR ASSEMBLIES (See Figure 2) (110 volts, 60 cycle) |
| 30244 | Bushing—Rubber bushing for turntable center |
| 33345 | Cap—Rubber cap for turntable spindle |
| 33346 | Coil—Motor field coil |
| 33350 | Frame—Motor mounting frame and bearing cup assembled |
| 33344 | Frame—Rotor frame, spindle shaft and laminations |
| 34480 | Hanger—Rubber hanger for mounting motor |
| 34479 | Lamination—Stator laminations and bearing assembled |
| 33041 | Ring—Retaining ring for turntable |
| 31039 | Turntable |
| | PICKUP AND ARM ASSEMBLIES |
| 33591 | Arm—Pickup arm only—less cartridge, base and cable |
| 34481 | Arm—Pickup pivot arm and shaft |
| 34482 | Base—Pickup mounting base |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 33123 | Damper—Viscoloid damper for pickup armature |
| 34311 | Ring—Retaining ring for pivot shaft |
| 33529 | Screw—Needle screw |
| | MISCELLANEOUS ASSEMBLIES |
| 31051 | Foot—Rubber foot for cabinet |
| 3961 | Knob—Volume control knob |
| 31054 | Mounting—Pickup arm mounting nuts, washer, and rubber spacer |
| 31048 | Plug—2-contact male plug for output cable |
| 33359 | Volume control and switch |

## RCA VICTROLA JUNIOR No. 41918

**Service Data:**

The motor in the RCA Victrola Junior is similar to the three-point suspension type used in Model R-100.

Refer to R-100 Service Data for mechanical and electrical data.

**Replacement Parts:**

| Stock No. | |
|---|---|
| 34431 | Arm—Tone arm complete with diaphragm, armature and needle screw |
| 34433 | Base—Tone arm swivel base assembly |
| 33346 | Coil—Motor coil, 105-125 volt, 60 cycle (heavy stack) |
| 33350 | Frame—Motor support frame and bearing cup |
| 33349 | Hanger—Rubber hanger block for motor |
| 33347 | Lamination—Motor stator laminations and bearing—less field coils (heavy stack) |
| 35394 | Lamination—Motor stator lamination and bearing, less field coils—for motor using thin stack |
| 33041 | Ring—One retaining ring and one washer for turntable spindle tip |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL R-100** |
| | PICKUP AND ARM ASSEMBLIES |
| 33121 | Arm—Pickup arm complete—less crystal cartridge |
| 33124 | Base—Pickup arm base and pivot shaft |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 33123 | Damper—Viscoloid damper for pickup armature |
| 33529 | Screw—Pickup needle screw |
| | MOTOR ASSEMBLIES (see figure 1) |
| 31045 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Rotor bearing—50 and 25 cycle |
| 33353 | Cap—Turntable spindle cap (rubber) |
| 33357 | Coil—Motor field coil—105-120 volts, 25 cycle |
| 31918 | Coil—Motor field coil—105-120 volts, 50 cycle |
| 31917 | Coil—Motor field coil, 105-120 V., 60 cycle |
| 31040 | Cushion—One seat rubber cushion for turntable mounting |
| 31047 | Cushion—Rubber cushion for rotor bearing |
| 33941 | Frame—Rotor frame and spindle—60 cycle |
| 33641 | Lamination—Rotor lamination—60 cycle |
| 33358 | Lamination—Stator laminations—25 cycle |
| 33354 | Lamination—Stator laminations—less coil 50 cycle |
| 33355 | Motor—105-120 volts, 25 cycle |
| 33351 | Motor—105-120 volts, 50 cycle |
| 33940 | Motor—105-120 V., 60 cycle |
| 32075 | Ring—Lead ring for turntable—25 cycle |
| 33041 | Ring—Retaining ring and washer for spindle cap |
| 33356 | Rotor—Rotor frame, laminations, and spindle shaft assembled—25 cycle |
| 33352 | Rotor—Rotor frame, laminations, and spindle shaft assembled—50 cycle |
| 31036 | Rotor—Turntable and rotor lamination for 60 cycle operation |
| 31042 | Stator—Stator assembly comprising coils and laminations for 60 cycle operation |
| 32076 | Turntable—Finished turntable plate only—25 cycle |
| 31039 | Turntable—Finished turntable plate only—50 cycle |
| 4083 | Washer—Leather washer |
| 33348 | Washers—Leather and metal washers for stator bearing |
| 14231 | Washer—Metal spacing washer |
| 32074 | Weight—One upper and one lower weight for stator—25 cycle (2 each required) |
| | MOTOR ASSEMBLIES (see figure 2) |
| 33345 | Cap—Turntable spindle cap (rubber) 60 cycle |
| 33346 | Coil—Motor field coil—105-120 volts, 60 cycle |
| 31040 | Cushion—One set rubber cushion for turntable mounting |
| 33350 | Frame—Motor support frame and bearing cup |
| 33349 | Hanger—Rubber hanger for mounting motor |
| 33347 | Lamination—Stator laminations and bearing—less field coils—60 cycle |
| 33343 | Motor—105-120 volts, 60 cycle |
| 33041 | Ring—Retaining ring and washer for spindle cap |
| 33344 | Rotor—Rotor frame, laminations, and spindle shaft assembled—60 cycle |
| 31039 | Turntable—Finished turntable plate only—60 cycle |
| 33348 | Washers—Leather and metal washers for stator bearing |
| | MISCELLANEOUS ASSEMBLIES |
| 31051 | Foot—Cabinet foot |
| 32500 | Mounting—Pickup arm mounting comprising one rubber cushion, 1 washer, and 1 snap ring |
| 31048 | Plug—2-contact male plugs for output cable |
| 33359 | Volume control and switch R1, S1 |

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 34429 | Spring—Spring for 34428 volume control knob |
| 34758 | Bushing—1 rubber and 1 metal for pickup arm |
| 34428 | Knob—Volume control and switch knob |
| 34863 | Wedge—Wood wedge |

# MODELS 94BK and 94BT

## Four-Tube, Single-Band, Battery-Operated Superheterodyne Receivers

### Electrical and Mechanical Specifications

Frequency Range ..... 540 to 1,750 kc
R-F Alignment Frequency ..... 1,500 kc (osc., ant.)
Intermediate Frequency ..... 455 kc

RADIOTRON COMPLEMENT
(1) RCA-1C7-G ..... First Det.-Osc.
(2) RCA-1D5-G ..... Intermediate Amp.
(3) RCA-1F7-G ..... Second Det., A-F Amp., A.V.C.
(4) RCA-1G5-G ..... Power Output

BATTERIES REQUIRED
"A", one 2½-volt air cell, or one 2-volt storage battery, or one 3-volt dry "A" battery. (With latter, use No. 30935, 2.2-ohm resistor in series with positive "A" lead.)
"B", two or three 45-volt heavy-duty "B" batteries.

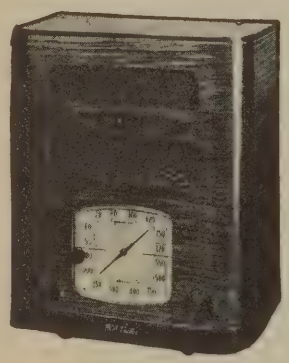
CURRENT CONSUMPTION
"A", at 2 volts, 0.36 amperes.
"B", 90 volts { 12.2 ma (switch at "Current Cutter" position). 17.9 ma (switch at "Full Power" position).
"B", 135 volts, 17.0 ma. (switch left in "Current Cutter" position).

| POWER OUTPUT | | Switch at "Current Cutter" | Switch at "Full Power" |
|---|---|---|---|
| 90-volts "B" | Undistorted | 0.02 watts | 0.16 watts |
| | Maximum | 0.23 watts | 0.29 watts |
| 135-volts "B" | Undistorted | 0.30 watts | ..... |
| | Maximum | 0.70 watts | ..... |

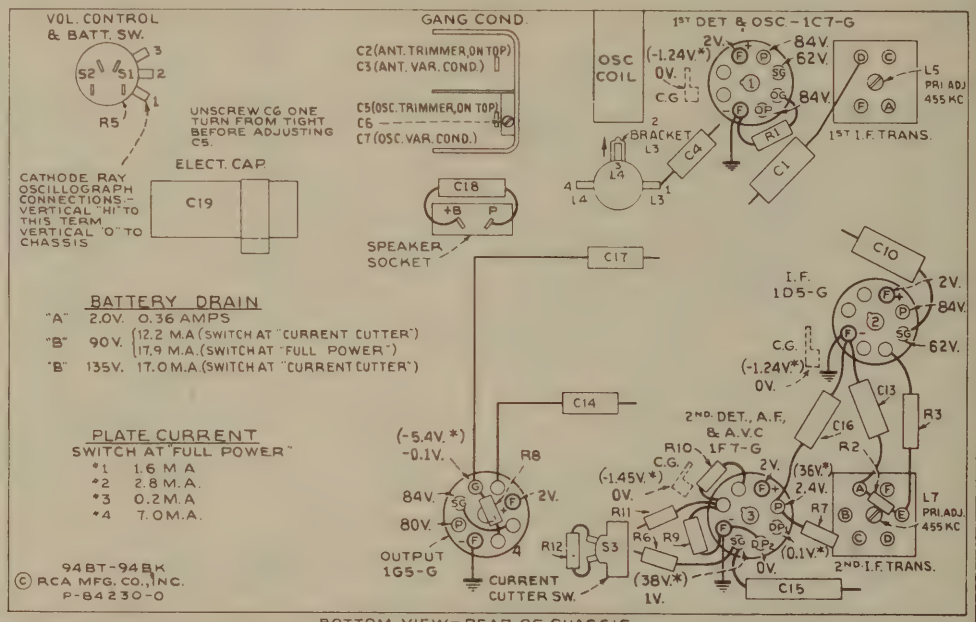
LOUDSPEAKER
Type ..... Permanent-magnet Dynamic
Diameter (94BT) ..... 5in., (94BK) ..... 6½ in.
Voice-coil Impedance ..... 3 ohms at 400 cycles

### Precautionary Lead Dress

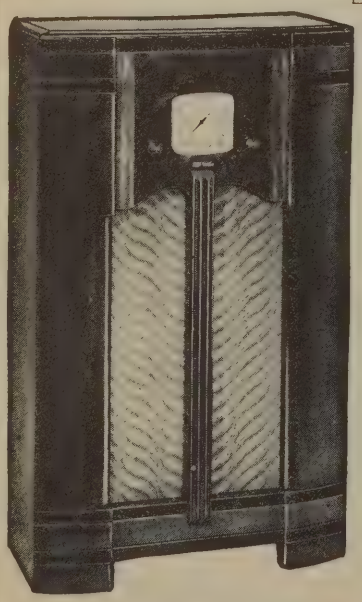
1. I.F. plate lead should be dressed close to and along edge of chassis.
2. Lead from antenna terminal should be wrapped (9 turns) around lead from ant. coil secondary to gang condenser (see schematic).
3. Antenna and ground leads should be arranged as shown in top view.



*Model 94BT*




BOTTOM VIEW—REAR OF CHASSIS



*Model 94BK*

*Radiotron Socket Voltages, and Location of Parts*

Measurements made to chassis unless otherwise indicated.
Measurements made with set tuned to quiet point, switch at "Full Power" position, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use the nearest range above the specified measured voltage.)
Values should hold within approximately ± 20% with 90-volts "B."
* Note: Values with star (*) are operating voltages.
Values not starred are actual measured voltages.

### Adaption for 1½-Volt Operation:

It is a relatively simple operation to convert the Model 94BT and 94BK battery receivers for use on 1½ volts. The following procedure should be used:

**Parts Required**

1 820 ohm, ½ watt resistor, Stock No. 14076
1 1-megohm, ½ watt resistor, Stock No. 13730
1 RCA-1A7G tube
1 RCA-1N5G tube
1 RCA-1H5G tube
1 RCA-1C5G tube

Refer to the Model 94BT-94BK Service Notes and effect the following changes:

(a) Remove R-3, R-6, R-9, R-11, R-12 and C-15 from the circuit.
(b) Connect 820 ohm resistor between yellow battery cable lead (pin No. 1 on the output tube socket), and the chassis.
(c) Re-connect R-10 between the green detector grid lead (pin No. 1 on the second detector socket) and the chassis.
(d) Interchange the connections to DP-1 and DP-2 (pins No. 4 and No. 5) on the second detector socket. DP-2 should connect to terminal "C" on the second I-F transformer, and DP-1 to the chassis.
(e) Connect 1 megohm resistor (Stock No. 13730) between terminal "E" on the second I-F transformer and the chassis.
(f) Remove the green lead connecting the I-F screen-grid to the first detector screen grid; and connect the I-F screen grid to terminal "A" on first I-F transformer.
(g) Disconnect ungrounded end of C-10 from I-F screen grid and connect to the first detector screen-grid.
(h) Disconnect the green battery cable lead from the +67½ volt plug pin and connect it to the black lead on the same plug (+45 volts).
(i) Replace 1C7-G 1st detector with 1A7-G. Replace 1D5-G I-F with 1N5-G. Replace 1F7-G 2nd detector with 1H5-G. Replace 1G5-G output with 1C5-G.
(j) Use standard 1½ volt dry battery or "Air Cell" for filament supply and two 45 volt "B" batteries for plate supply.
(k) The "Current Cutter" switch label should be removed or covered, and instructions corrected, as this switch no longer has effect.

# Alignment Procedure

**Cathode-ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

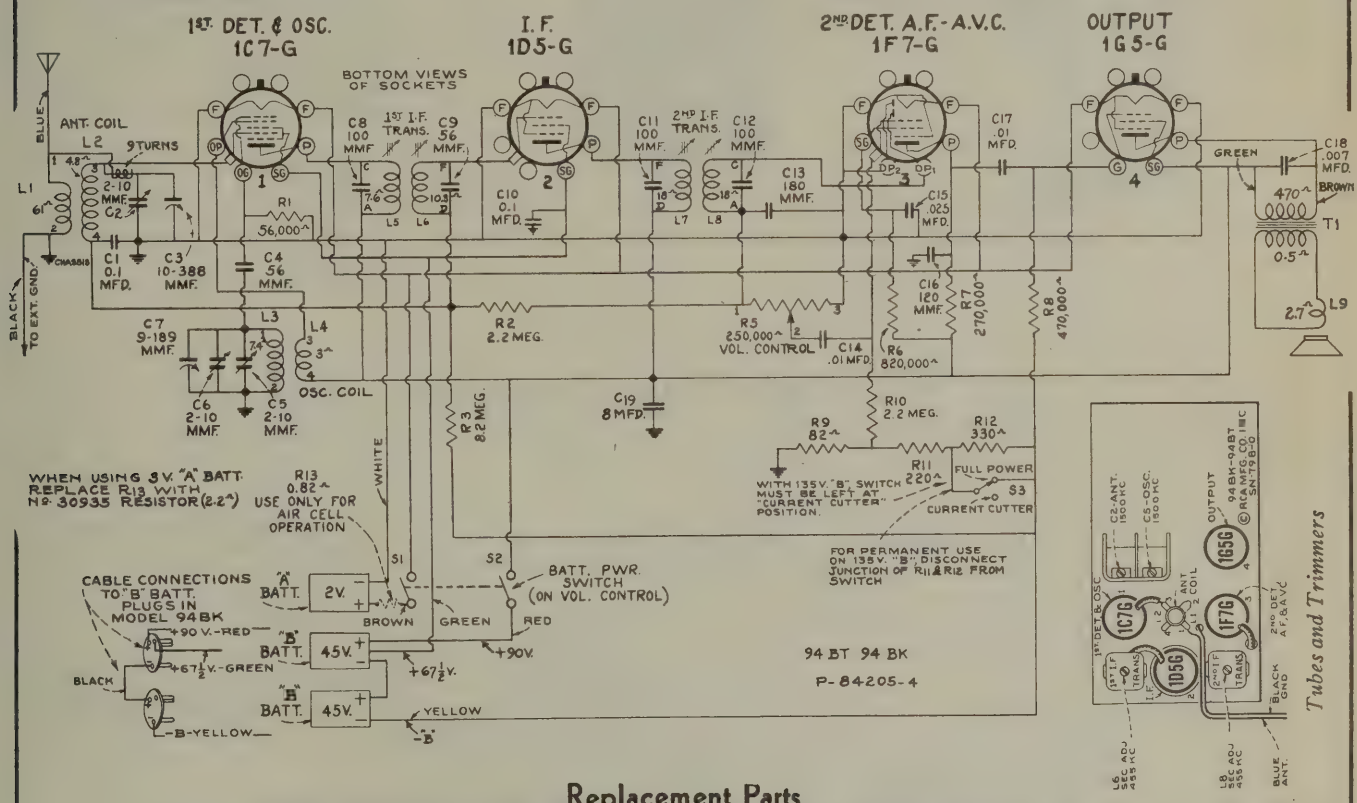
For additional details, refer to booklet "RCA Victor Receiver Alignment."

**Pre-setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

**Re-sealing I.F. Adjustment Screws.**—After completion of alignment, seal the I.F. magnetite-core adjustment screws with a few drops of household cement.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 1D5-G I-F grid cap, in series with .001 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F transformer) |
| No. 2 | 1C7-G 1st-det. grid cap, in series with .001 mfd. | 455 kc | | L5 and L6 (1st I-F transformer) |
| No. 3 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc | C5* (oscillator) C2 (antenna) |

* Trimmer C6 on gang condenser should be unscrewed one complete turn from tight, before adjusting C5.




Tubes and Trimmers

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

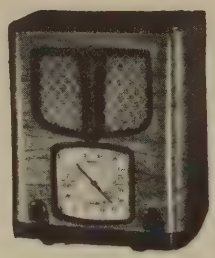
| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 30954 | Cable—Battery cable complete |
| 30949 | Capacitor—56 Mmfd. (C9) |
| 12723 | Capacitor—56 Mmfd. (C4) |
| 30904 | Capacitor—100 Mmfd. (C8, C11, C12) |
| 12724 | Capacitor—120 Mmfd. (C16) |
| 13003 | Capacitor—180 Mmfd. (C13) |
| 5148 | Capacitor—.007 Mfd. (C18) |
| 14393 | Capacitor—.01 Mfd. (C14, C17) |
| 4870 | Capacitor—.025 Mfd. (C15) |
| 30899 | Capacitor—0.1 Mfd. (C1, C10) |
| 13610 | Capacitor—8 Mfd. (C19) |
| 30950 | Coil—Antenna coil (L1, L2) |
| 30895 | Coil—Oscillator coil (L3, L4) |
| 30945 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C7) |
| 30877 | Cord—Drive cord |
| 30905 | Core—Adjustable core for I.F. transformers |
| 30951 | Dial—Dial scale and dial scale holder and bracket assembly |
| 30701 | Drum—Tuning condenser drive cord drum with set screw |
| 14635 | Indicator—Station selector indicator pointer |
| 30955 | Resistor—0.82 ohm, flexible type (R13) |
| 14074 | Resistor—82 ohms, ½ watt (R9) |
| 14561 | Resistor—220 ohms, ½ watt (R11) |
| 30538 | Resistor—330 ohms, ½ watt (R12) |
| 5029 | Resistor—56,000 ohms, ½ watt (R1) |
| 12199 | Resistor—270,000 ohms, ½ watt (R7) |
| 11172 | Resistor—470,000 ohms, ½ watt (R8) |
| 30963 | Resistor—820,000 ohms, ½ watt (R6) |
| 12679 | Resistor—2.2 meg., ½ watt (R2, R10) |
| 30962 | Resistor—8.2 meg., ½ watt (R3) |
| 14887 | Retainer—Retainer for knob shaft |
| 30952 | Shaft—Station selector knob shaft |
| 3682 | Shield—Radiotron shield |
| 11196 | Socket—Radiotron socket |
| 30956 | Socket—Speaker socket |
| 14191 | Spring—Drive cord tension spring |
| 30953 | Switch—Current-cutter switch (S3) |
| 30948 | Transformer—First I.F. (L5, L6, C8, C9) |
| 30903 | Transformer—Second I.F. (L7, L8, C11, C12) |
| 30947 | Volume control and on-off switch (R5, S1, S2) |
| | **REPRODUCER ASSEMBLIES** |
| | **Model 94BT (Speaker 84226-1)** |
| 30970 | Cone—Reproducer cone and voice coil (L9) |
| 30969 | Reproducer complete |
| 30971 | Transformer—Output transformer (T1) |
| | **Model 94BK (Speaker 84115-2)** |
| 30973 | Cone—Reproducer cone and voice coil (L9) |
| 30972 | Reproducer complete |
| 30974 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30975 | Crystal—Station selector celluloid crystal |
| 14269 | Knob—Station selector or volume control knob |
| 12827 | Plug—3-contact male plug for battery cable—94BK only |
| 30935 | Resistor—2.2 ohms, flexible type to replace Stock No. 30955 when using 3-volt battery |
| 30308 | Screw—Chassis mounting screw and washer—94BT only—Package of 4 |
| 30467 | Screw—Chassis mounting screw and washer—94BK only—Package of 4 |
| 14270 | Spring—Retaining spring for knob |

# MODELS 94BK1 and 94BT1

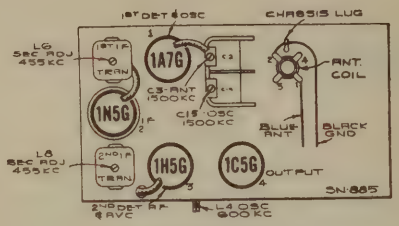
Chassis No. RC-333-B RC-333-B

## Four-Tube, Single-Band, Battery-Operated Superheterodyne Receivers

*Model 94BK1*



Model 94BT-1




*Tube and Trimmer Locations*

## Electrical and Mechanical Specifications

Frequency Range ..... 540 to 1,720 kc
RF Alignment Frequencies .. 600 kc (osc., ant.), 1,500 kc (osc., ant.)
Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-1A7-G ..... First Detector—Oscillator
(2) RCA-1N5-G ..... IF Amplifier
(3) RCA-1H5-G ..... 2nd Det., A.F., A.V.C.
(4) RCA-1C5-G ..... Power Output

Batteries Required

"A," one 1.4-volt Air Cell or 1.5-volt Dry Cell.
"B," two 45-volt heavy duty "B" batteries.

Current Consumption

"A" at 1.4 volts, 0.26 amp.
"B" at 90 volts, 9.6 ma.

Power Output

Undistorted ..... 0.115 watt
Maximum ..... 0.280 watt

Loudspeaker

Type ..... Permanent Magnet Dynamic
Diameter ..... 94BK1, 6 inches; 94BT1, 5 inches
Voice Coil Impedance ..... 3 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (94BT1) ..... | 12⅜ in. | 10⅜ in. | 6¾ in. |
| Cabinet Dimensions (94BK1) ..... | 37¼ in. | 22 in. | 10¼ in. |
| Chassis Base Dimensions ..... | 2 in. | 9⅜ in. | 5⅜ in. |
| Over-all Chassis Height ..... | | | 6 in. |
| Weight (94BT1) ..... | 7⅜ lbs. net; 10½ lbs. shipping | | |
| Weight (94BK1) ..... | 26½ lbs. net; 39½ lbs. shipping | | |

Operating Controls ..... (1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio ..... 8 to 1

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **RECEIVER ASSEMBLIES** | | 30952 | Shaft—Station selector knob shaft | |
| 12629 | Capacitor—56 mmfd. (C6) | | 32149 | Shield—Tube shield | |
| 12723 | Capacitor—56 mmfd. (C13) | | 11196 | Socket—Tube socket | |
| 14262 | Capacitor—110 mmfd. (C5) | | 30956 | Socket—Speaker socket | |
| 12404 | Capacitor—120 mmfd. (C7, C8) | | 14191 | Spring—Drive cord tension spring | |
| 12725 | Capacitor—150 mmfd. (C11) | | 14261 | Transformer—First I.F. (L5, L6, C5, C6) | |
| 14712 | Capacitor—180 mmfd. (C9) | | 14308 | Transformer—Second I.F. (L7, L8, C7, C8, C9, R3) | |
| 30433 | Capacitor—430 mmfd. (C17) | | 30947 | Volume control and on-off switch (R5, S1, S2) | |
| 5148 | Capacitor—.007 mfd. (C12) | | | **SPEAKER ASSEMBLIES Model 94BT1 (Speaker 84226-3)** | |
| 14393 | Capacitor—.01 mfd. (C4, C10, C19) | | 32163 | Cone—Speaker cone and voice coil (L9) | |
| 4839 | Capacitor—0.1 mfd. (C1) | | 32162 | Speaker—Complete | |
| 32187 | Capacitor—8 mfd. (C18) | | 32164 | Transformer—Output transformer (T1) | |
| 32150 | Coil—Antenna coil (L1, L2) | | | **SPEAKER ASSEMBLIES Model 94BK1 (Speaker 84145-2)** | |
| 32148 | Coil—Oscillator coil (L3, L4) | | 30973 | Cone—Speaker cone and voice coil (L9) | |
| 32147 | Condenser—2-gang variable tuning condenser (C2, C3, C14, C15, C16) | | 30972 | Speaker—Complete | |
| 30877 | Cord—Drive cord | | 30974 | Transformer—Output transformer (T1) | |
| 30905 | Core—Adjustable core for I.F. transformers | | | **MISCELLANEOUS ASSEMBLIES** | |
| 32186 | Dial—Dial scale, plate, and brackets assembled | | 30975 | Crystal—Station selector celluloid crystal | |
| 30701 | Drum—Tuning condenser drive cord drum with set screw | | 31355 | Knob—Tuning or volume control knob | |
| 14635 | Indicator—Station selector indicator pointer | | 30308 | Screw—Chassis mounting screw and washer—(94BT1 only) 4 required | |
| 32208 | Plug—2-prong male plug for battery cable | | 30467 | Screw—Chassis mounting screw and washer—(94BK1 only) 4 required | |
| 12827 | Plug—3-prong male plug for battery cable | | 14270 | Spring—Retaining spring for knob | |
| 14076 | Resistor—820 ohms, ½ watt (R9) | | | | |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R3) | | | | |
| 13715 | Resistor—68,000 ohms, ½ watt (R1) | | | | |
| 12264 | Resistor—220,000 ohms, ½ watt (R10) | | | | |
| 13730 | Resistor—1 meg., ½ watt (R4, R6) | | | | |
| 12679 | Resistor—2.2 meg., ½ watt (R2, R7, R8) | | | | |
| 14887 | Retainer—Retainer for knob shaft | | | | |

# Alignment Procedure

**Cathode-ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

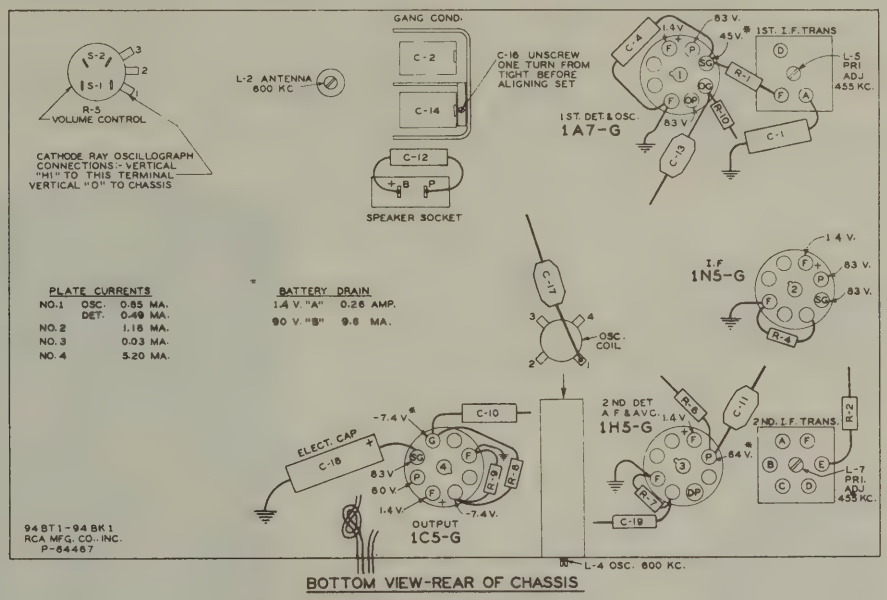
**Pre-setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

## Precautionary Lead Dress

1. Red lead from second i-f transformer to screen terminal of 1N5-G must be dressed close to and along edge of chassis.
2. Twisted green wire from antenna coil to gang must be 9 turns and kept clear of rotor.
3. Blue and green leads to volume control must be dressed close to chassis and between gang and front apron.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 1N5-G I-F grid cap, in series with 0.01 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F transformer) |
| No. 2 | 1A7-G 1st-det. grid cap, in series with 0.01 mfd. | 455 kc | | L5 and L6 (1st I-F transformer) |
| No. 3 | Antenna lead, in series with 200 mmfd. | 600 kc | 600 kc | L4 (oscillator) L2 (antenna) |
| No. 4 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc | C15† (oscillator) C3 (antenna) |

† Trimmer C16 on gang condenser should be unscrewed one complete turn from tight, before adjusting C15.

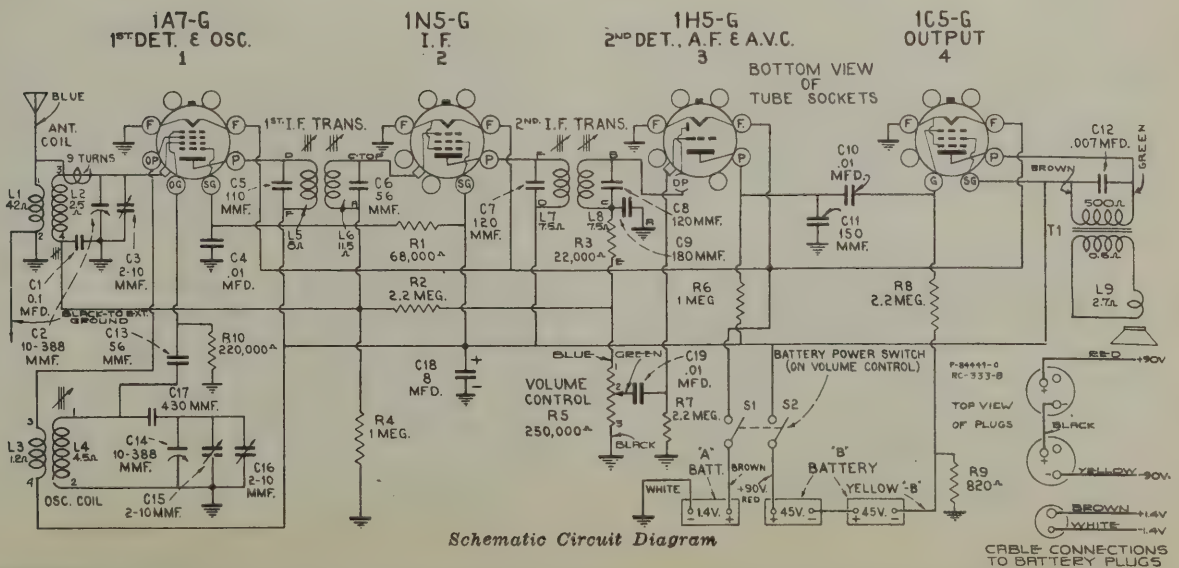



BOTTOM VIEW-REAR OF CHASSIS

*Socket Voltages, and Location of Parts*

* **NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured value will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated battery voltage.




*Schematic Circuit Diagram*

# MODELS 94BK2 and 94BT2

Chassis No. RC-390 RC-390

## Four-Tube, Electric-Tuning, Two-Band, Battery-Operated, Superheterodyne Receivers

## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540—1,720 kc |
| Short Wave ("C" Band) | 5.8—15.4 mc |
| Four Electric Tuning Positions | 550—1,500 kc |
| One station between approximately 550— 950 kc (Button No. 1) | |
| One station between approximately 610—1,090 kc (Button No. 2) | |
| One station between approximately 750—1,370 kc (Button No. 3) | |
| One station between approximately 845—1,500 kc (Button No. 4) | |
| Intermediate Frequency | 455 kc |

RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-1A7-G | First Detector—Oscillator |
| (2) RCA-1N5-G | I-F Amplifier |
| (3) RCA-1H5-G | 2nd Detector, A.V.C., and 1st A.F. |
| (4) RCA-1A5-G | Power Output |

BATTERIES REQUIRED

"A," one 1.4-volt Air Cell or 1.5-volt Dry Cell
"B," two 45-volt heavy-duty "B" batteries

CURRENT CONSUMPTION

"A," 0.2 amp. at 1.4 volts
"B," 6.8 ma. at 90 volts

POWER OUTPUT

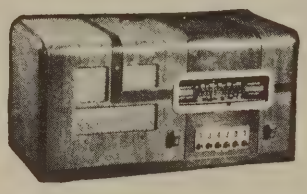
| | |
|---|---|
| Undistorted | 0.08 watt |
| Maximum | 0.18 watt |

LOUDSPEAKER

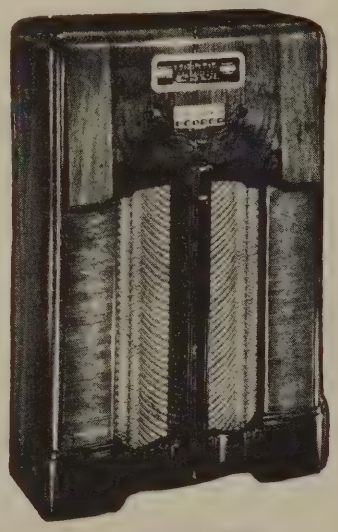
| | |
|---|---|
| Type | Permanent Magnet Dynamic |
| Diameter | 94BK2, 8 inches; 94BT2, 6 inches |
| Voice Coil Impedance (at 400 cycles) | 94BK2, 3 ohms; 94BT2, 2.2 ohms |

| | Model 94BK2 | Model 94BT2 |
|---|---|---|
| Height | 37¼ inches | 10⅝ inches |
| Width | 22 inches | 20-13/16 inches |
| Depth | 10 inches | 9¾ inches |
| Net Weight | 40½ pounds | 15¼ pounds |
| Shipping Weight | 53½ pounds | 19 pounds |
| Chassis Base Dimensions | 3 inches x 11⅛ inches x 5 inches | |
| Over-all Height of Chassis | | 7¾ inches |
| Tuning Drive Ratio | | 12 to 1 |

*Location of Controls*



*Model 94BT2*

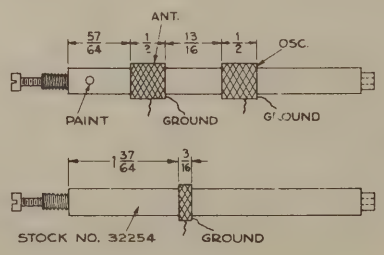


*Model 94BK2*

### Alignment Data:

Before aligning these receivers, it is suggested that the following trimmer and core adjustments be pre-set to the mechanical dimensions given below:

(a) The three trimmer condensers C-30, C-3, and C-2 on rear apron should be set to maximum capacity (screws turned full clockwise) and then unscrew each about ¼ turn.




*Models 94BK2, 94BT2 Coil Spacing.*

(b) Unscrew L-4 to its minimum inductance position (screw all way out) and then screw in 8 full turns.

(c) Unscrew L-6 to its minimum inductance position (screw all way out) and then screw in 6 full turns. Do not run this adjustment screw in too far (more than 12 to 15 turns) as the core will contact a lug on this coil at plus "B" potential causing a high resistance short and no signal (dead set).

(d) Screw L-9 all the way in and then unscrew 13 full turns (about ⅜ inch of threads exposed).

These pre-settings will assist in quicker alignment, especially if the adjustments have been tampered with or new parts installed.

When servicing these receivers, do not shift the positions of either the oscillator section (front) or antenna section (rear) on any of the four tandem push button coil assemblies, since their positions on the form governs the tracking between the two circuits. The illustrations show the proper spacings of coils.

The coils are coded with a spot of paint as follows:

Black—Stock No. 32250
White—Stock No. 32251
Red—Stock No. 32252
Green—Stock No. 32253

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

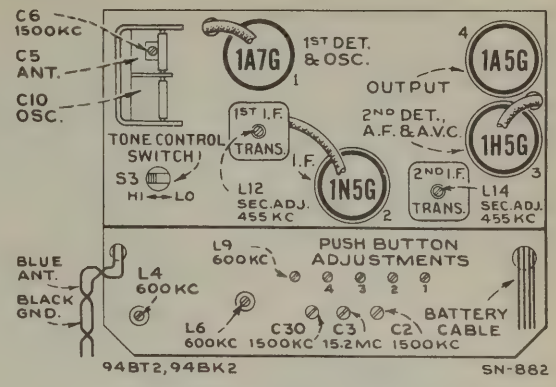
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment".



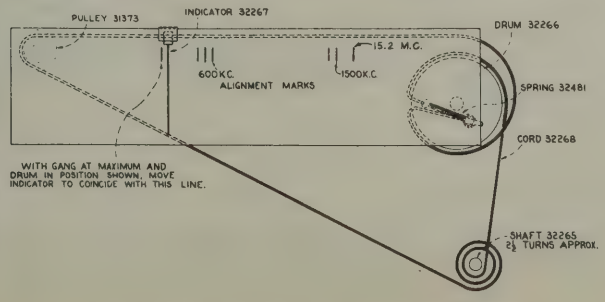

*Tube and Trimmer Locations*

| Steps | Connect the High Side of Test Oscillator to: | Tune Test Oscillator to: | Push Button | Turn Radio Dial to: | Adjust for Maximum Peak Output: |
|---|---|---|---|---|---|
| 1 | 1N5-G I-F grid cap in series with .01 mfd. | 455 kc | B.C. (5) | No Signal between 550—750 kc. | L13 and L14 (2nd I-F Trans.) |
| 2 | 1A7-G Det. grid cap in series with .01 mfd. | 455 kc | B.C. (5) | | L11 and L12 (1st I-F Trans.) |
| 3 | Antenna Lead (blue) in series with 200 mmfd. | 1,500 kc | No. 4 | | L20-L26 (No.4 Push Button Adj.) C2 (ant.) |
| 4 | Antenna Lead (blue) in series with 200 mmfd. | 600 kc | No. 1 | | L23-L29 *(No. 1 Push Button Adj.) L6 (osc.) |
| 5 | Antenna Lead (blue) in series with 200 mmfd. | 1,500 kc | No. 4 | | L20-L26 (No. 4 Push Button Adj.) C2 (ant.) |
| 6 | Antenna Lead (blue) in series with 200 mmfd. | 600 kc | No. 1 | | L23-L29 *(No. 1 Push Button Adj.) L6 (osc.) |
| 7 | Antenna Lead (blue) in series with 200 mmfd. | 1,500 kc | B.C. (5) | 1,500 kc Cal. Mark | C30 (osc.) C6 (ant.) |
| 8 | Antenna Lead (blue) in series with 200 mmfd. | 600 kc | B.C. (5) | 600 kc Cal. Mark | L9 (osc.) L4 (ant.) |
| 9 | Antenna Lead (blue) in series with 200 mmfd. | 1,500 kc | B.C. (5) | 1,500 kc Cal. Mark | C30 (osc.) C6 (ant.) |
| 10 | Antenna Lead (blue) in series with 300 ohms | 15.2 mc | S.W. (6) | Signal Near 15.2 mc Cal. Mark† | **C3 (ant.) |
| 11 | Follow the "Adjustments for Electric Tuning." | | | | |

* Adjust L23—L29 (No. 1 push button adjustment) and L6 at the same time, rocking in for maximum signal.

** Use maximum capacity peak if two peaks can be obtained, rock in for maximum signal. A weaker signal (image) should be received about one-quarter inch to the left on the dial plate.

† If two signals are received, set the dial to the higher frequency (right hand) position.




*Dial Drive Hookup and Alignment Marks*

Note: The oscillator tracks 455 kc above the signal on all bands. After the receiver has been installed and the antenna connected, it is sometimes advisable to make a slight change in the adjustment of the antenna trimmer, C2. In most cases it is desirable to make this adjustment while receiving a station on No. 4 push button. However, if a station received on one of the other buttons is especially weak, it may be advisable to make the adjustment while receiving the weak station on this button.

## Precautionary Lead Dress

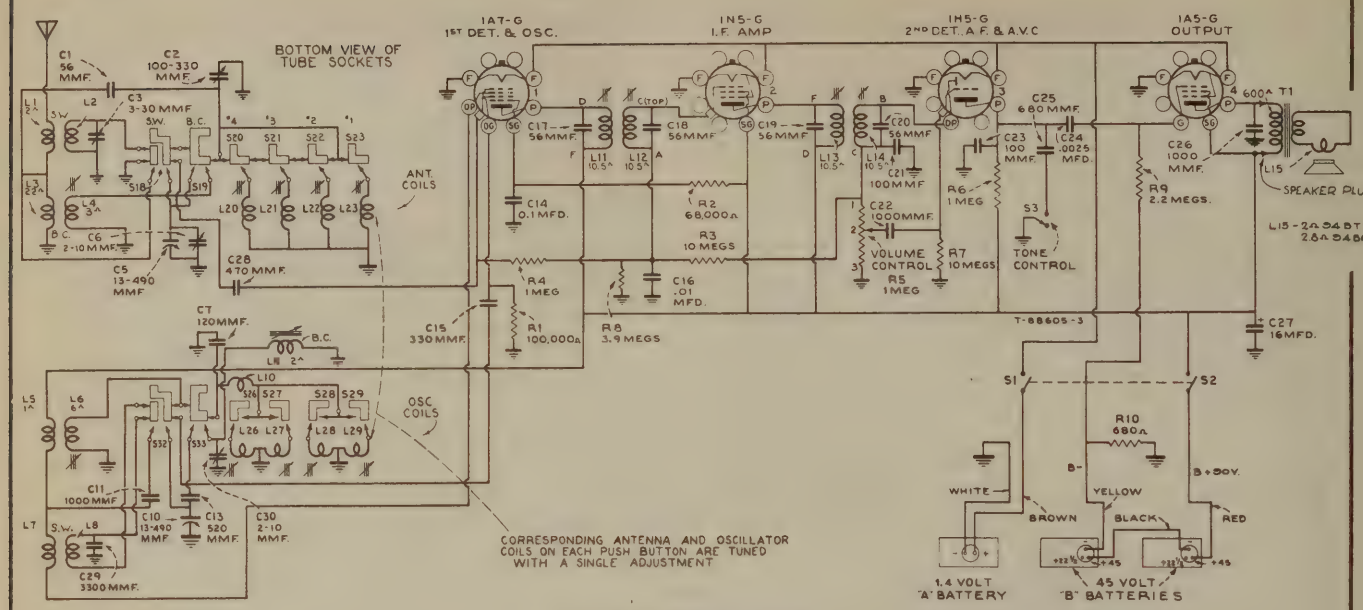
1. Green lead to first detector grid cap should be pulled out of the chassis as far as possible, and dressed away from the tube envelope.

2. Blue lead from push button switch to gang condenser must be dressed over the top of the switch.

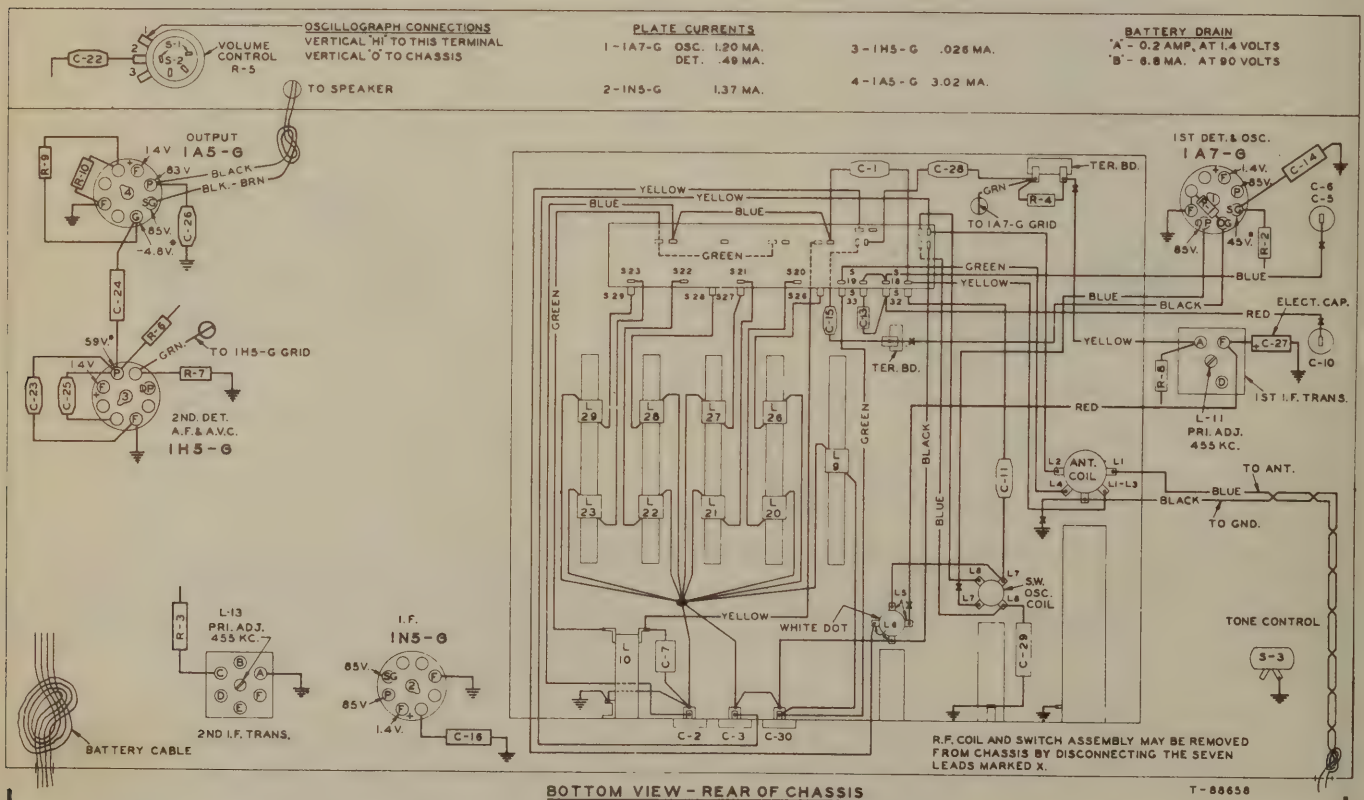
3. Leads to push button coils must be dressed close to the coils.

4. Red and blue leads to gang condenser must be dressed away from chassis.

5. Blue antenna lead must be dressed in the end of the chassis away from gang leads and coil windings.




*Schematic Circuit Diagram*




BOTTOM VIEW - REAR OF CHASSIS

*R-F Wiring Diagram and Socket Voltages*

***NOTE:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured value will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated battery voltage.

## Adjustments for Electric Tuning

These models have six push buttons. The right-hand button connects the receiver for dial tuning on the "Short-wave" band, the next button connects for dial tuning on the "Standard-broadcast" band, and the other four buttons are for electric tuning of four different stations in the standard-broadcast band. Each station button connects separate oscillator and antenna coils which are tandem-tuned by ganged magnetite cores, and may be adjusted for the desired stations. Use a small screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

1. Make a list of the four desired stations, arranged in order from low to high frequencies.
2. Push in the broadcast dial-tuning button (second from right), and manually tune in the first station on the list.
3. Push in station button No. 1 (left-hand) and adjust No. 1 push button adjustment to receive this station. Turn the adjusting screw all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust for each of the remaining three stations in the same manner. (Clockwise adjustment of the screw tunes the circuits to lower frequencies.)
5. After installation, and with antenna properly connected, readjust C2 as outlined in Note under "Alignment Procedure."

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 32259 | Capacitor—3-section variable trimmer capacitor 2-10, 3-30, 100-330 mmfd. (C30, C3, C2) |
| 30949 | Capacitor—56 mmfd. (C17, C18, C19, C20) |
| 12723 | Capacitor—56 mmfd. (C1) |
| 30904 | Capacitor—100 mmfd. (C21) |
| 12720 | Capacitor—100 mmfd. (C23) |
| 12724 | Capacitor—120 mmfd. (C7) |
| 12952 | Capacitor—330 mmfd. (C15) |
| 30433 | Capacitor—470 mmfd. (C28) |
| 32269 | Capacitor—520 mmfd. (C13) |
| 14498 | Capacitor—680 mmfd. (C25) |
| 12635 | Capacitor—1,000 mmfd. (C11, C22, C26) |
| 4881 | Capacitor—3,300 mmfd. (C29) |
| 5107 | Capacitor—.0025 mfd. (C24) |
| 14393 | Capacitor—.01 mfd. (C16) |
| 4839 | Capacitor—0.1 mfd. (C14) |
| 31323 | Capacitor—16 mfd. (C7) |
| 32254 | Coil—Broadcast oscillator coil (L9) |
| 32258 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32260 | Coil—Short wave oscillator coil (L7, L8) |
| 32256 | Coil—Push button osc. series coil (L10) |
| 32250 | Coil—Push button ant. and oscillator coil (L23, L29) |
| 32251 | Coil—Push button ant. and oscillator coil (L22, L28) |
| 32252 | Coil—Push button ant. and oscillator coil (L21, L27) |
| 32253 | Coil—Push button ant. and oscillator coil (L20, L26) |
| 32257 | Coil—Push button osc. shunt coil (L5, L6) |
| 32249 | Condenser—2-gang variable condenser (C5, C6, C10) |
| 32268 | Cord—Drive cord |
| 12800 | Core—Variable core and stud for antenna coil No. 32258 |
| 32266 | Drum—Variable condenser drive drum |
| 32267 | Indicator—Dial scale pointer |
| 32208 | Plug—2-prong male for battery cable |
| 5119 | Plug—3-contact female for speaker cable |
| 12827 | Plug—3-prong male for battery cable |
| 31373 | Pulley—Drive cord pullley |
| 14887 | Retainer—Tuning knob shaft retainer or drive cord pulley retaining washer |
| 12262 | Resistor—680 ohms, ½ watt (R10) |
| 13715 | Resistor—68,000 ohms, ½ watt (R2) |
| 14560 | Resistor—100,000 ohms, ½ watt (R1) |
| 13730 | Resistor—1 meg., ½ watt (R4, R6) |
| 12679 | Resistor—2.2 meg., ½ watt (R9) |
| 13167 | Resistor—3.9 meg., ½ watt (R8) |
| 13601 | Resistor—10 meg., ½ watt (R3, R7) |

| STOCK No. | DESCRIPTION |
|---|---|
| 4669 | Screw—No. 8-32 square head set screw from drum |
| 32261 | Screw—Push button oscillator coil adjustment screw and mounting nut |
| 32265 | Shaft—Tuning knob shaft |
| 3682 | Shield—Tube shield |
| 31251 | Socket—Tube socket |
| 32481 | Spring—Drive cord tension spring |
| 12007 | Spring—Retaining spring for oscillator coil adjustment screw |
| 32255 | Switch—Push button switch (S18, S19, S20, S21, S22, S23, S26, S27, S28, S29, S32, S33) |
| 30953 | Switch—Tone control switch (S3) |
| 32263 | Transformer—First I-F transformer (L11, L12, C17, C18) |
| 32264 | Transformer—Second I-F transformer (L13, L14, C19, C20, C21) |
| 32262 | Volume control and power switch (R5, S1, S2) |
| | **SPEAKER ASSEMBLIES (84307-2) Model 94BT2** |
| 32271 | Cone—Speaker cone and voice coil (L15) |
| 5118 | Plug—3-contact male for speaker |
| 32270 | Speaker complete |
| 32272 | Transformer—Output transformer (T1) |
| | **SPEAKER ASSEMBLIES (84477-1) Model 94BK2** |
| 32274 | Cone—Speaker cone and voice coil (L15) |
| 5118 | Plug—3-contact male for speaker |
| 32273 | Speaker complete |
| 32272 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32279 | Button—Push button |
| 31935 | Clip—Spring clip to hold dial scale |
| 32276 | Dial—Dial scale (glass) |
| 32277 | Escutcheon—Dial scale escutcheon and crystal |
| 32278 | Escutcheon—Push button escutcheon |
| 31355 | Knob—Station selector or volume control knob |
| 32281 | Marker—"Broadcast" marker tab |
| 32067 | Marker—Push button call letter markers |
| 32280 | Marker—"Short Wave" marker tab |
| 14267 | Screw—Chassis mounting screw and washer (4 required), Model 94BT2 |
| 30467 | Screw—Chassis mounting screw and washer (4 required), Model 94BK2 |
| 14270 | Spring—Retaining spring for knob |

# MODEL 94BP SERIES

## Chassis No. RC-407 RC-407B

## Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver

The following models comprise the 94BP1 Series—all contain the No. RC-407 chassis.

94BP61 Dark Brown
94BP62 Tan
94BP64 Light Brown
94BP66 Gray
94BP80 Brown Leather
94BP81 Black Leather

The following models comprise the 2nd Production 94BP1 Series—all contain the No. RC 407B chassis.

94BP61 Dark Brown
94BP62 Tan
94BP64 Light Brown
94BP66 Gray

## Electrical and Mechanical Specifications RC407

Frequency Range ..... 550-1,720 kc
Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-1A7-G ..... 1st-Det.—Osc.
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-1C5-G ..... Output

Batteries Required

"A," one 1.5 volt dry plug-type "A," 2¼-in. x 2¼-in. x 4-in. (Eveready No. 742 or equivalent)
"B," two 45 volt dry plug-type "B," 2¾-in. x 4-in. x 5¼-in. (Eveready No. 762 or equivalent)

Current Consumption

"A," 0.24 ampere—"B," 9.0 milliamperes

Power Output

Undistorted ..... 0.10 watt
Maximum ..... 0.21 watt

Loudspeaker

Type ..... 4-inch permanent-magnet dynamic
Voice-coil Impedance ..... 2 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) ..... | 9¼ | 12¼ | 6¼ |

Weight—(Net) less batteries ..... 6 pounds
With batteries ..... 12¼ pounds

Tuning Drive Ratio ..... 10 to 1

## Electrical and Mechanical Specifications RC407B

Frequency Range ..... 530-1,650 kc
Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-1A7-G ..... 1st-Det.—Osc.
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-1Q5-GT ..... Output

Power Output

Undistorted ..... 0.12 watt
Maximum ..... 0.25 watt

Current Consumption

"A," 0.24 ampere—"B," 11.6 milliamperes

**1st-Production, RC-407:**

The following notes apply only to the 1st-production of Models 94BP1 Series (94BP-61, -62,-64,-66,-80,-81).

**Antenna Attachment:**

Due to the "extended" service that the 94BP1 Series radio has been put to use by many of its owners—such as service on small boats, camping trips, and other uses in locations far distant from a reliable broadcasting source—there have been requests for information on the use of an antenna to be used in conjunction with the receiver.

The radio is one of high sensitivity, but where few stations are receivable, two methods of using an external antenna may be used:

(a) Five to ten turns of wire may be wrapped around the left end (loop end) of the cabinet attaching one end of the wire to a high antenna and the other to ground.

(b) One to two turns of insulated wire may be wrapped around one end of the loop in the cabinet, making connections to the end of an external antenna and ground. The wire may be fastened to the loop supports with scotch tape or string and the ends brought out through the rear of the cabinet making a permanent attachment for an outside antenna.

If care is taken in placing the wire around the loop (using small 22 gauge D.C.C. wire spaced as far as possible from the loop winding) the receiver will not have to be realigned, and the directional effect of the loop will not be so prevalent.

**Oscillator Grid Resistor in 1st-Production:**

The oscillator grid resistor is changed from 220,000 ohms to 150,000 ohms (Stock No. 14020).

**Volume Control Change in 1st-Production:**

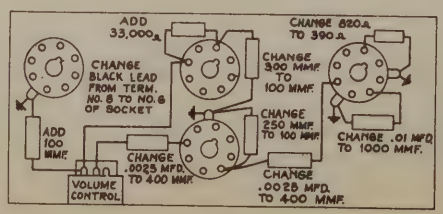
The volume control is changed from Stock No. 33304 to 34427.

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 34426 | Indicator—On-off indicator ..... |
| 32571 | Knob—Tan volume control or tuning knob for 94BP-61,-80, and tuning knob for 94BP-64 ..... |
| 33309 | Knob—Tan volume control knob, 94BP-64 ..... |

**Circuit Modifications:**

Circuit modifications as explained and illustrated below have been effected on the 1st-production (RC-407) Model 94BP1 Series, battery-operated portable receivers. These changes are incorporated on the bulk of production. Wherever it is necessary to service an instrument not having the revised circuit, it is recommended that the changes shown be made.


ADD 33,000Ω
CHANGE 820Ω TO 390Ω
CHANGE BLACK LEAD FROM TERM. NO. 8 TO NO. 6 OF SOCKET
CHANGE 300 MMF. TO 100 MMF.
CHANGE 250 MMF. TO 100 MMF.
CHANGE .01 MFD. TO 1000 MMF.
ADD 100 MMF.
CHANGE .0025 MFD. TO 400 MMF.
VOLUME CONTROL
CHANGE .0025 MFD. TO 400 MMF.

*Circuit Revisions in 1st Production Model 94BP1 Series (RC-407).*

**MATERIAL REQUIRED:**

| Quantity | Part | RCA Stock No. |
|---|---|---|
| 2 | Capacitor—400 mmf | 13894 |
| 3 | Capacitor—100 mmf | 12720 |
| 1 | Capacitor—1,000 mmf | 12635 |
| 1 | Resistor—390 ohm | 30498 |
| 1 | Resistor—33,000 ohm | 30685 |

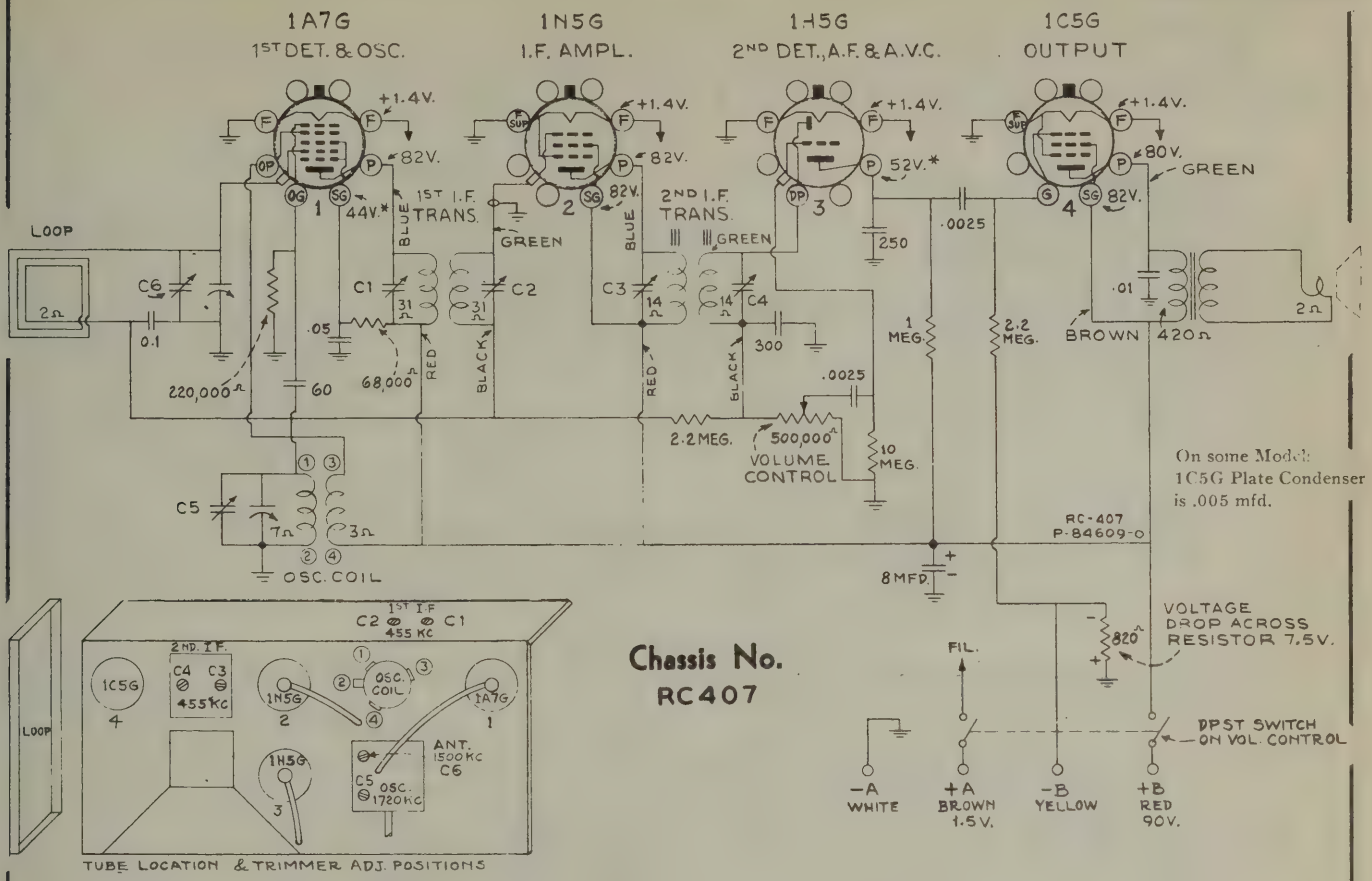
**PROCEDURE:**

(a) Change 820 ohm bias resistor of 1C5G stage to 390 ohms.
(b) Change plate coupling capacitor from .0025 to 400 mmfd.
(c) Change 1H5G plate by-pass from 250 mmfd to 100 mmfd.
(d) Change 300 mmfd of 2nd I-F secondary by-pass to 100 mmfd.
(e) Change .0025 mfd of volume control arm circuit to 400 mmfd.
(f) Change 1C5G plate by-pass from .01 mfd to .001 mfd.
(g) Add 33,000 ohm resistor in series with high end of volume control.
(h) By-pass high end of volume control to chassis with 100 mmfd.

**Loudspeakers:**

Three types of loudspeakers have been employed in Models BT-40 and 94BP1. Though of different design and using non-interchangeable cones, unfortunately, two of these speakers were identically marked. As a consequence, there has been considerable misunderstanding in ordering and in filling orders for replacement cones, with resultant delay.

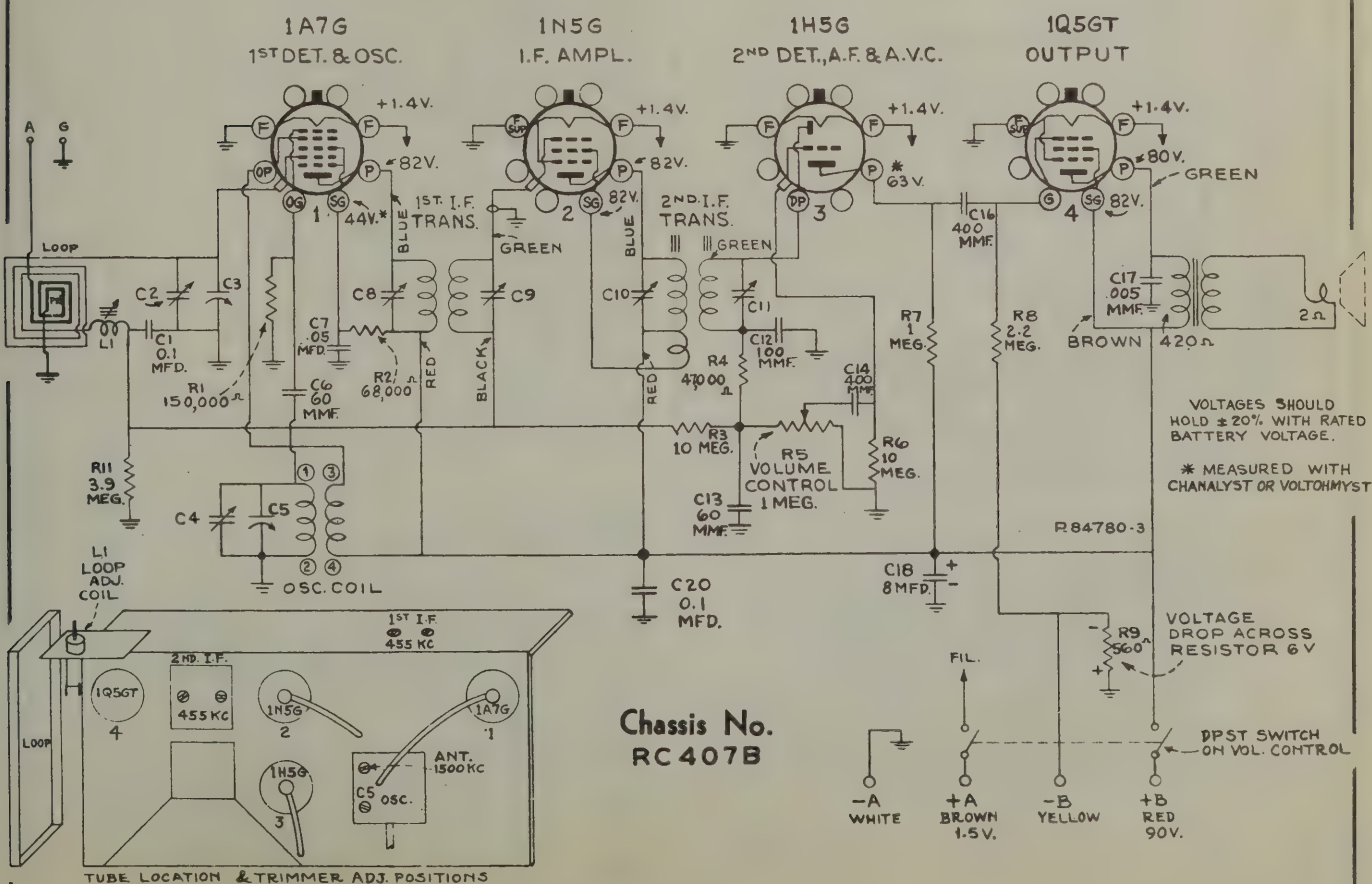
In order to prevent delays in the filling of future orders, the complete speakers only will be stocked. This may be ordered by Stock Number 33058.




On some Model 1C5G Plate Condenser is .005 mfd.




**Chassis No. RC407**




VOLTAGES SHOULD HOLD ± 20% WITH RATED BATTERY VOLTAGE.

* MEASURED WITH CHANALYST OR VOLTOHMYST




**Chassis No. RC407B**

## Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action. Connect low-side of oscillator to the receiver chassis.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Loop-Adjusting Coil.—The second production of 94BP-1 series incorporates a loop inductance adjustment coil (L1) which is adjusted at 600 kc. For best performance, it is recommended that the alignment procedure be followed exactly as given. This will ensure maximum sensitivity over the entire broadcast band.

### CHASSIS NO. R407

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1A7G 1st-Det. grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C1, C2, C3, C4 (1st and 2nd I-F transformers) |
| 2 | Antenna coil loop by means of one turn of wire placed near loop | 1,720 kc | Full clockwise (out of mesh) | C5 (oscillator) |
| 3 | | 1,500 kc | Resonance on 1,500 kc signal | C6 (antenna) |

### CHASSIS NO. 407B

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1A7G 1st-Det. grid cap, in series with .01 mfd. | 455 kc | Quiet point at 1,600 kc end of dial | C11, C10, C9, C8 (1st and 2nd I-F transformers) |
| 2 | Antenna terminal, in series with 15 mmfd. | 1,650 kc | Full clockwise (out of mesh) | C4 (oscillator) |
| 3 | | Set antenna trimmer C2 approximately ¼ turn from maximum capacity | | |
| 4 | | 600 kc | 600 kc signal | L1 (ant.) |
| 5 | | 1,500 kc | 1,500 kc | C2 (ant.) |
| 6 | Repeat steps 4 and 5 | | | |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

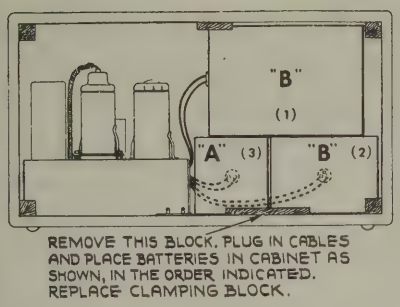
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-407)** |
| 13057 | Capacitor—60 mmfd. |
| 12488 | Capacitor—250 mmfd. |
| 12952 | Capacitor—300 mmfd. |
| 5107 | Capacitor—.0025 mfd. |
| 4838 | Capacitor—.005 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 33303 | Capacitor—Electrolytic, 8 mfd. |
| 33055 | Coil—Oscillator coil |
| 33060 | Condenser—2-gang variable tuning |
| 32634 | Cord—Drive cord |
| 32946 | Drum—Drive cord drum |
| 33300 | Loop—Complete antenna loop |
| 32208 | Plug—2-contact plug for battery cable |
| 32641 | Plug—3-contact male plug for battery cable |
| 14076 | Resistor—820 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 33305 | Shaft—Tuning knob shaft and bushing |
| 32595 | Shield—Tube shield—less cap |
| 32537 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 33296 | Spring—Drive drum retaining spring |
| 33301 | Transformer—First i-f transformer |
| 33302 | Transformer—Second i-f transformer |
| | **SPEAKER ASSEMBLIES (39128-1)** |
| 33058 | Speaker complete |
| 33062 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33310 | Dial—Glass dial scale |
| 33311 | Escutcheon—Dial scale escutcheon |
| 33006 | Feet—Cabinet feet |
| 33376 | Handle—Carrying handle—Models 94BP61 94BP62, 94BP64 |
| 33377 | Handle—Carrying handle—Model 94BP66 |
| 33306 | Knob—Black tuning knob—Model 94BP66 |
| 33308 | Knob—Black volume control knob—Model 94BP68 |
| 32895 | Knob—Walnut tuning knob—Models 94BP62, 94BP81 |
| 33307 | Knob—Walnut volume control knob—Models 94BP62, 94BP81 |
| 33312 | Nut—Speed nut to mount dial |
| 31646 | Spring—Knob retaining spring |

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-407-B)** |
| 34121 | Capacitor—2-gang variable tuning |
| 13057 | Capacitor—60 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 30433 | Capacitor—400 mmfd. |
| 33584 | Capacitor—.005 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 33303 | Capacitor—Electrolytic—8 mfd. |
| 34592 | Coil—Antenna loop adjusting coil |
| 32573 | Coil—Oscillator coil |
| 34590 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 32946 | Drum—Drive cord drum |
| 34591 | Loop—Antenna loop less adjusting coil |
| 32208 | Plug—2-contact plug for battery cable |
| 32641 | Plug—3-contact plug for battery cable |
| 12414 | Resistor—560 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14020 | Resistor—150,000 ohms, ½ watt |
| 13730 | Resistor—1 megohm, ½ watt |
| 12679 | Resistor—2.2 megohm, ½ watt |
| 13167 | Resistor—3.9 megohm, ½ watt |
| 13601 | Resistor—10 megohm, ½ watt |
| 33305 | Shaft—Tuning knob shaft and bushing |
| 32595 | Shield—Tube shield less cap |
| 31319 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 33296 | Spring—Drive drum retaining spring |
| 34118 | Transformer—1st I.F. transformer |
| 34119 | Transformer—2nd I.F. transformer |
| | **SPEAKER ASSEMBLIES (39128-1)** |
| 35601 | Cone and voice coil |
| 33058 | Speaker—Complete |
| 33062 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 33310 | Dial—Glass dial scale |
| 34426 | Disc—"On-Off" indicator disc (with flat of shaft hole opposite white segment in disc) |
| 34774 | Disc—"On-Off" indicator disc (with flat of shaft hole 90° counter-clockwise from white segment in disc) |
| 33376 | Handle—Carrying handle—Models 94BP-61, -62, -64 |
| 33377 | Handle—Carrying handle—Model 94BP-66 |
| 33306 | Knob—Black tuning or volume control and power switch knob for Model 94BP-66 |
| 32571 | Knob—Tan tuning or volume control and power switch knob for Models 94BP-61, -64 |
| 32895 | Knob—Walnut tuning or volume control and power switch knob for Model 94BP-62 |
| 33312 | Nut—Speed nut to mount dial |
| 31646 | Spring—Knob retaining spring |

# MODEL 94BP4 SERIES

## Chassis No. RC-410

## Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver

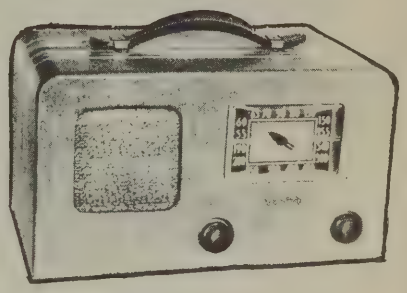



REMOVE THIS BLOCK, PLUG IN CABLES AND PLACE BATTERIES IN CABINET AS SHOWN, IN THE ORDER INDICATED. REPLACE CLAMPING BLOCK.

### MODELS 94BP4-B, -C, -R

**Technical Information and Service Data:**

These models are identical to Model 94BP4 except for the material covering the case.
"B" indicates Buffalo covering.
"C" indicates Cowhide covering.
"R" indicates Rawhide covering.



Model 94BP4

## Electrical and Mechanical Specifications

Frequency Range ..... 550-1,560 kc
Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-1A7-G ..... 1st-Det.—Osc.
(2) RCA-1N5-G ..... I-F Amplifier
(3) RCA-1H5-G ..... 2nd-Det., A-F, and A.V.C.
(4) RCA-1C5-G ..... Output

Batteries Required

"A," one 1.5 volt dry plug-type "A," 2½ in. x 2½-in. x 4-in. (No. 742)
"B," two 45 volt dry plug-type "B," 2½-in. x 4-in. x 5¼-in. (No. 732)

Current Consumption

"A" 0.24 ampere—"B," 9.0 milliamperes

Power Output

Undistorted ..... 0.10 watt
Maximum ..... 0.21 watt

Loudspeaker

Type ..... 5-inch permanent-magnet dynamic
Voice-coil Impedance ..... 2.2 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) ..... | 7¾ | 14 | 8½ |
| Chassis Base Dimensions (inches) ..... | 2 | 7¼ | 5½ |

Over-all Chassis Height ..... 6¼ inches
Weight—Shipping weight, less batteries ..... 12½ pounds
Net weight, with batteries ..... 16 pounds
Tuning Drive Ratio ..... 8 to 1

### Elimination of Audio Oscillation or Howl:

Should the green lead from No. 8 pin (to volume control) of the 1C5-G socket be in too close proximity to the blue lead connected to the same socket, a high pitched audio oscillation is likely to result. The two leads should be spaced from each other as far as possible. It is also important that the green lead from tuning condenser to loop antenna be dressed between the 1C5-G and 1H5-G tubes.

### Additional Replacement Parts:

Stock No.
33010 Knob—Tuning knob
32778 Knob—Volume knob (with dot)

## Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-410)** |
| 32592 | Bracket—Dial bracket |
| 12607 | Cap—Shield cap for first i.f. transformer |
| 12581 | Cap—Shield cap for second i.f. transformer |
| 32598 | Cap—Shield cap for 1H5G |
| 32596 | Cap—Tube shield cap |
| 14021 | Capacitor—22 mmfd. (C18) |
| 12948 | Capacitor—33 mmfd. (C20) |
| 30949 | Capacitor—56 mmfd. (C3, C4, C5, C6) |
| 12723 | Capacitor—56 mmfd. (C7) |
| 30904 | Capacitor—100 mmfd. (C9) |
| 12720 | Capacitor—100 mmfd. (C12) |
| 30433 | Capacitor—470 mmfd. (C15) |
| 12635 | Capacitor—1,000 mmfd. (C10) |
| 5107 | Capacitor—.0025 mfd. (C13, C14) |
| 14393 | Capacitor—.01 mfd. (C8) |
| 4886 | Capacitor—.05 mfd. (C11) |
| 32187 | Capacitor—8 mfd., 150 volts (C19) |
| 32148 | Coil—Oscillator coil (L1, L2) |
| 32591 | Condenser—2-gang variable (C1, C2, C16, C17) |
| 32634 | Cord—Condenser and pointer drive cord |
| 32593 | Dial—Dial scale |
| 30701 | Drum—Drive cord drum |
| 32605 | Indicator—Dial indicator pointer |
| 32208 | Plug—2-contact male for "A" leads |
| 32641 | Plug—3-contact male for "B" leads |
| 14076 | Resistor—820 ohms, ½ watt (R9) |
| 13715 | Resistor—68,000 ohms, ½ watt (R2) |
| 14560 | Resistor—100,000 ohms, ½ watt (R10) |
| 12264 | Resistor—220,000 ohms, ½ watt (R1) |
| 13730 | Resistor—1 meg., ½ watt (R7) |
| 12679 | Resistor—2.2 meg., ½ watt (R8) |
| 13167 | Resistor—3.9 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R3, R6) |
| 14887 | Retainer—Tuning knob shaft retainer |
| 4669 | Screw No. 8-32 x ⅜ set screw for drum, Stock No. 30701 |
| 32609 | Shaft—Dial pointer shaft and pulley |
| 32597 | Shaft—Tuning knob shaft |
| 32595 | Shield—Tube shield—less cap |
| 31251 | Socket—Tube socket |
| 30956 | Socket—2-contact female |
| 14191 | Spring—Condenser drive cord spring |
| 30631 | Spring—Pointer drive cord spring |
| 32263 | Transformer—First i.f. transformer (L3, L4, C3, C4) |
| 32264 | Transformer—Second i.f. transformer (L5, L6, C5, C6, C9) |
| 32594 | Volume control and switch (R5, S1, S2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32602 | Bezel—Dial bezel and crystal |
| 32163 | Cone—Speaker cone and voice coil (L7) |
| 32600 | Escutcheon—Knob escutcheon |
| 32603 | Grille—Speaker grille and screen |
| 32633 | Handle—Carrying handle |
| 32604 | Loop—Antenna loop complete |
| 32601 | Retainer—Knob escutcheon retainer |
| 32162 | Speaker complete (84226-3) |
| 11349 | Spring—Knob retaining spring |
| 32164 | Transformer—Output transformer (T1) |

## Alignment Procedure

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

**Pre-setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

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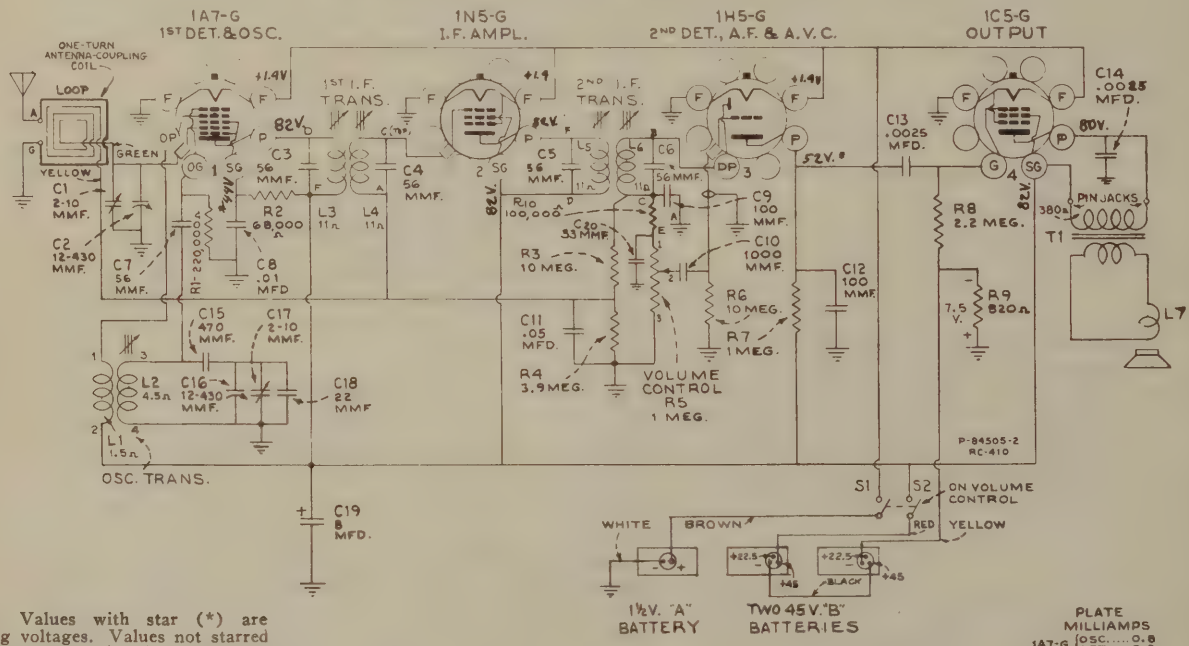
**Precautionary Lead Dress.—**

1. Dress speaker leads down to chassis.
2. The green lead from the loop to the antenna section of the gang should be dressed between the output and detector tube shields and pulled toward the far corner of the loop by means of the rubber band.
3. The spiral shield on the 1st-A.F. grid lead should be brought as close as possible to the grid cap.
4. Leads to the high side and tap of the volume control should be dressed down to the chassis and away from the output tube plate lead.

**Antenna.**—An antenna and ground may be connected to "A" and "G" at bottom of cabinet. If total length of antenna and lead-in is more than 150 feet, connect a 300 mmf capacitor in series with lead-in.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 1N5-G grid cap, in series with .001 mfd. | 455 kc | Quiet point between 550-750 kc | L5 and L6 (2nd I-F transformer) |
| 2 | 1A7-G grid cap, in series with .001 mfd. | 455 kc | | L3 and L4 (1st I-F transformer) |
| 3 | Assemble chassis and batteries in correct position in cabinet, and fasten rear cover (loop) in place while making the following adjustments, which are accessible through holes in the bottom of the cabinet. | | | |
| 4 | Antenna terminal, in series with 200 mfd. Connect low side of test-osc. to "G" term. | 1500 kc | 1500 kc* | C17 (osc.) C1 (ant.) |
| 5 | | 600 kc | 600 kc* | L2 (osc.) Rock in |
| 6 | Repeat steps 4 and 5. | | | |

* Use bottom of "1" in "150" for 1500 kc calibration point, and use center of "0" in "60" for 600 kc calibration point.




**Note:** Values with star (*) are operating voltages. Values not starred are actual measured voltages.

Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately ± 20% with rated battery voltage.

PLATE MILLIAMPS

| | | |
|---|---|---|
| 1A7-G | OSC. | 0.8 |
| | DET. | 0.8 |
| 1N5-G | | 1.1 |
| 1H5-G | | 0.03 |
| 1C5-G | | 4.8 |

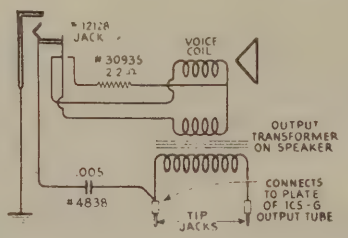
### Headphone Attachments:

A jack for headphone operation can be installed quickly and easily without removing the chassis. The method outlined below permits operation with either headphones or loudspeaker, or both together. The set and loudspeaker function in the normal manner when the headphones are not plugged in the jack. When the plug is inserted part way in the jack, the loudspeaker and headphones both operate. Pushing the plug all the way into the jack disconnects the loudspeaker but leaves the headphones in operation. (A 2.2 ohm resistor is automatically connected as a dummy voice-coil load when the plug is inserted all the way.)

**MATERIAL REQUIRED:**

| Stock No. | Description |
|---|---|
| (1) 12128 | Jack—Telephone jack |
| (1) 30935 | Resistor—2.2 ohm flexible type |
| (1) 4838 | Capacitor—.005 mfd. |

Also one pair of radio headphones of standard "2,000-ohm" or "3,000-ohm" type (d-c resistance) complete with plug.




*Model 94BP4 Headphone Attachment Circuit.*

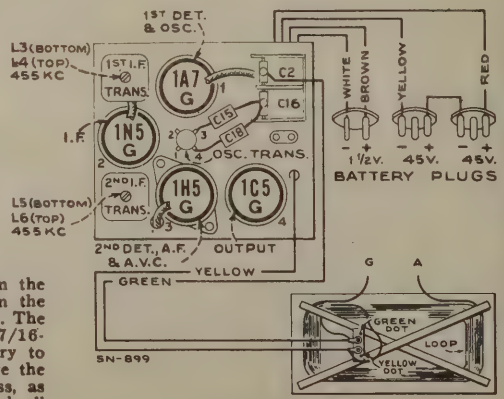
**PROCEDURE:**

(a) Remove the back cover.

(b) Drill a 7/16-inch hole for the jack in the top of the cabinet at a point between the output tube (1C5-G) and the batteries. The top of the cabinet is approximately 7/16-inch thick and it is therefore necessary to chisel the inside of the cabinet (where the jack fits) to about 5/16-inch thickness, as otherwise the plug cannot be inserted all the way into the jack.

(c) Remove the batteries.

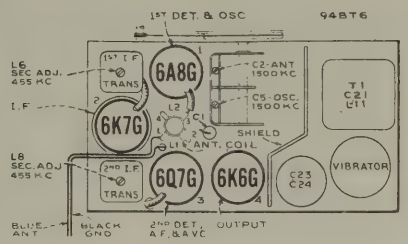
(d) Make connections as shown in the diagram. Leave sufficient slack in these connections so that the batteries can be installed. Keep the leads grouped together and dressed away from the tubes.

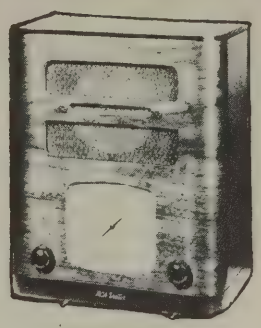



*Tube Location*

# MODEL 94BT6

## Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver



*Model 94BT6*

## Electrical and Mechanical Specifications

Frequency Range ..... 540 to 1,750 kc
R-F Alignment Frequency ..... 1,500 kc
Intermediate Frequency ..... 455 kc

RADIOTRON COMPLEMENT
(1) RCA-6A8-G ..... First Det.-Osc.
(2) RCA-6K7-G ..... Intermediate Amp.
(3) RCA-6Q7-G ..... Second-Det., A-F Amp., A.V.C.
(4) RCA-6K6-G ..... Power Output

BATTERY REQUIRED — 6-volt Storage "A" Battery.
CURRENT CONSUMPTION — At 6 volts, 2.8 amperes.

POWER OUTPUT (6 volts "A")
Undistorted ..... 0.45 watts
Maximum ..... 0.7 watts

LOUDSPEAKER
Type ..... 5-inch Permanent-magnet Dynamic
Voice-coil Impedance ..... 3 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions | 12⅜ in. | 10⅝ in. | 6¾ in. |
| Chassis Base | 2 in. | 9¾ in. | 5⅜ in. |

Over-all Chassis Height ..... 6¾ in.
Weight ..... 11 lbs. net, 13½ lbs. shipping
Operating Controls ..... (1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio ..... 8 to 1

## Alignment Procedure

**Cathode-ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

**Pre-setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 6K7-G I-F grid cap, in series with .001 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F transformer) |
| No. 2 | 6A8-G 1st-det. grid cap, in series with .001 mfd. | 455 kc | | L5 and L6 (1st I-F transformer) |
| No. 3 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc | C5* (oscillator) C2 (antenna) |

* Adjust C6 on gang condenser to one complete turn from tight, before adjusting C5.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 30959 | Cable—Battery cable complete |
| 30967 | Cable—Shielded volume control cable |
| 12723 | Capacitor—56 Mmfd. (C8) |
| 30904 | Capacitor—100 Mmfd. (C9, C10, C12, C13) |
| 12724 | Capacitor—120 Mmfd. (C17) |
| 13003 | Capacitor—180 Mmfd. (C14) |
| 30964 | Capacitor—330 Mmfd. (C4) |
| 30966 | Capacitor—1,000 Mmfd. (C22) |
| 14393 | Capacitor—.01 Mfd. (C15, C18, C19) |
| 4937 | Capacitor—.01 Mfd. (C27) |
| 4886 | Capacitor—.05 Mfd. (C11) |
| 4839 | Capacitor—0.1 Mfd. (C16) |
| 30899 | Capacitor—0.1 Mfd. (C1) |
| 30965 | Capacitor—0.25 Mfd. (C20) |
| 30961 | Capacitor—Comprising 2 sections each 16 Mfd. (C23, C24) |
| 30968 | Coil—"A" filter choke coil (L10) |
| 30950 | Coil—Antenna coil (L1, L2) |
| 30895 | Coil—Oscillator coil (L3, L4) |
| 30945 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C7) |
| 30877 | Cord—Drive cord |
| 30905 | Core—Adjustable core for I.F. transformers |
| 14289 | Clips—Battery clips—1 marked "+" and 1 unmarked |
| 30951 | Dial—Dial scale and dial scale holder and bracket assembly |
| 30701 | Drum—Tuning condenser drive cord drum with set screw |
| 5140 | Fuse—Battery cable fuse (F1) |
| 14635 | Indicator—Station selector indicator pointer |
| 13220 | Resistor—56 ohms, ½ watt (R16) |
| 14074 | Resistor—82 ohms, ½ watt (R9) |
| 30498 | Resistor—390 ohms, ½ watt (R18) |
| 30681 | Resistor—470 ohms, 1 watt (R12) |
| 11353 | Resistor—680 ohms, ½ watt (R10) |
| 5175 | Resistor—5,600 ohms, ½ watt (R17) |
| 12759 | Resistor—15,000 ohms, ½ watt (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R15) |
| 5029 | Resistor—56,000 ohms, ½ watt (R1) |
| 11172 | Resistor—470,000 ohms, ½ watt (R7, R11) |
| 12679 | Resistor—2.2 meg., ½ watt (R4, R6) |
| 30271 | Resistor—4.7 meg., ½ watt (R2) |
| 14887 | Retainer—Retainer for knob shaft |
| 30952 | Shaft—Station selector knob shaft |
| 3682 | Shield—Radiotron shield |
| 11196 | Socket—Radiotron socket |
| 30956 | Socket—Speaker socket |
| 14312 | Socket—Vibrator socket |
| 14191 | Spring—Drive cord tension spring |
| 30957 | Transformer—First I.F. transformer (L5, L6, C9, C10) |
| 30903 | Transformer—Second I.F. transformer (L7, L8, C12, C13) |
| 30960 | Transformer—Vibrator transformer (T1, C21, L11) |
| 14309 | Vibrator—Plug in vibrator (L12) |
| 30958 | Volume control and on-off switch (R5, S1) |
| | **REPRODUCER ASSEMBLIES (Speaker 84226-1)** |
| 30970 | Cone—Reproducer cone and voice coil (L9) |
| 30969 | Reproducer complete |
| 30971 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30975 | Crystal—Station selector celluloid crystal |
| 14269 | Knob—Station selector or volume control knob |
| 30308 | Screw—Chassis mounting screw and washer—Package of 4 |
| 14270 | Spring—Retaining spring for knob |

## Precautionary Lead Dress

1. Leads on C16 and C20, and lead from R16 to terminal board, must be short. C22 and C4 are soldered direct (no leads).

2. Dress L10 away from chassis. Dress T1 secondary leads (brown and green) away from base and free of other leads (same applies to R17 and C27). Dress T1 secondary midtap (brown-black) free of other leads and close to chassis.

3. Maintain original ground points.

4. Antenna and ground leads 36 inches long, twisted, and arranged as shown in top view.

5. I.F. plate lead (blue) dressed close to and along edge of chassis.

**Battery Charger Connections.**—The positive side of the 6-volt "A" circuit is connected to the receiver chassis, and the chassis is normally grounded. If the charger has a ground on the negative side, the ground should be removed, or changed to the positive side.

Do not change the length of leads from the receiver to the battery.

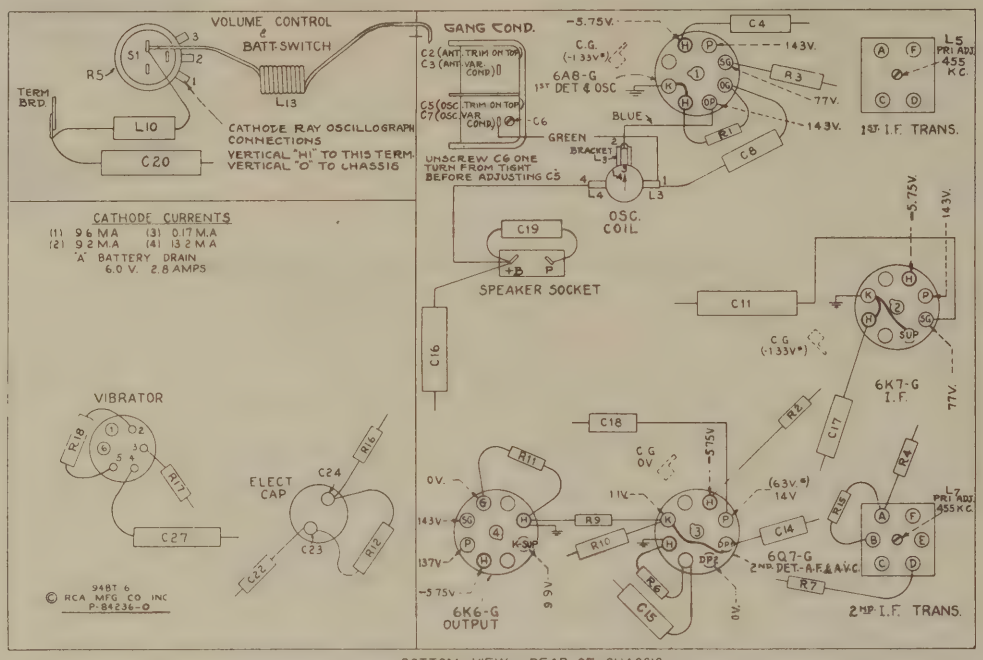



*Figure 2—Radiotron Socket Voltages, and Location of Parts*

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use the nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% with 6 volts "A."

* **Note:** Values with star (*) are operating voltages.

Values not starred are actual measured voltages.

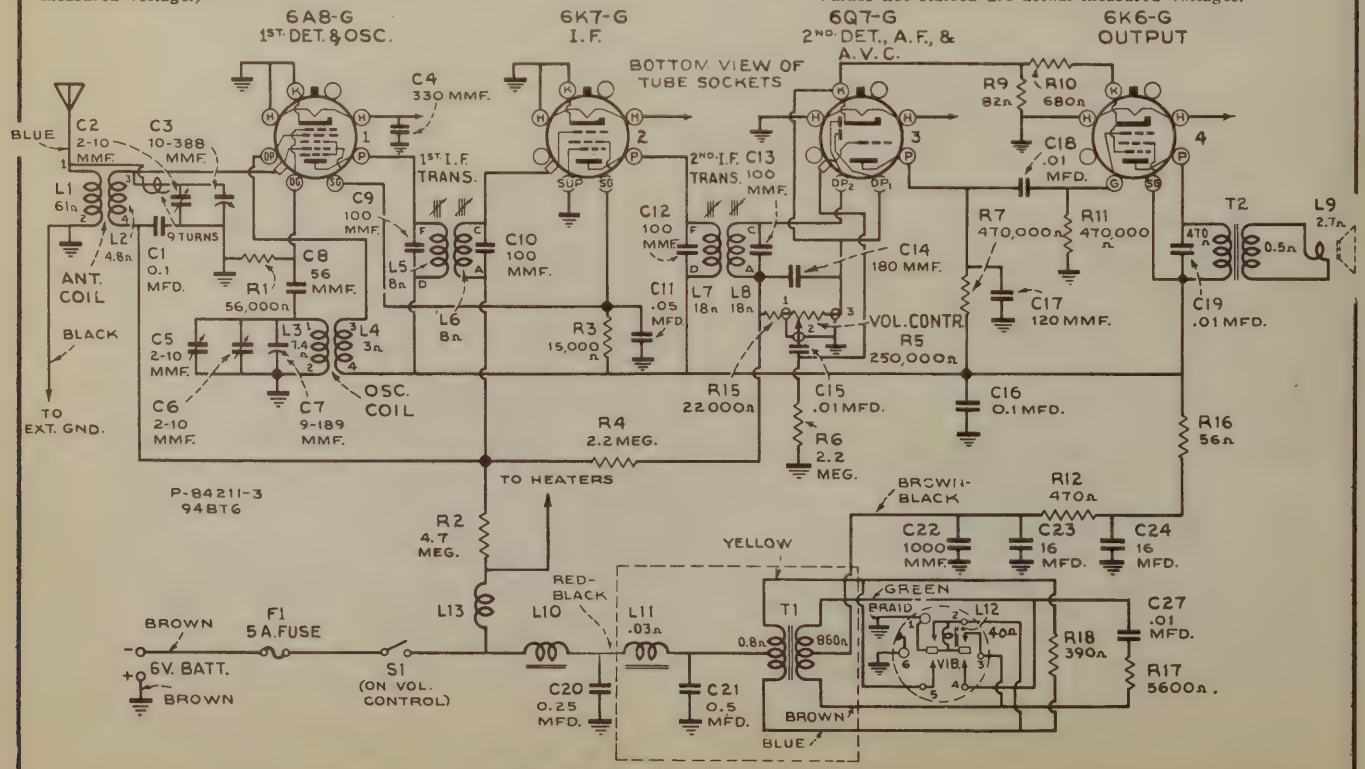
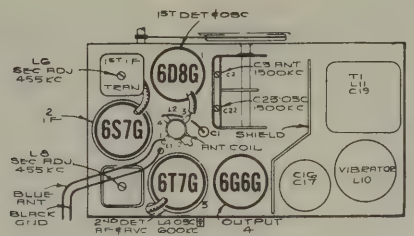



*Figure 3—Schematic Circuit Diagram*

# MODEL 94BT61

## Chassis No. RC-333-C

## Four-Tube, Single-Band, Battery-Operated, Superheterodyne Receiver




*Tube and Trimmer Locations*

## Electrical and Mechanical Specifications

Frequency Range ..... 540 to 1,720 kc
R-F Alignment Frequencies .... 600 kc (osc.), 1,500 kc (osc., ant.)
Intermediate Frequency ..... 455 kc

RCA Tube Complement

(1) RCA-6D8-G ..... First Detector—Oscillator
(2) RCA-6S7-G ..... I-F Amplifier
(3) RCA-6T7-G ..... 2nd Det., A-F., A.V.C.
(4) RCA-6G6-G ..... Power Output

| Battery Required | Current Consumption |
|---|---|
| 6-volt Storage "A" Battery. | At 6 volts, 1.6 amperes. |

Power Output (6 volts "A")
Undistorted ..... 0.45 watt
Maximum ..... 0.8 watt

Loudspeaker
Type ..... 5-inch Permanent Magnet Dynamic
Voice-coil Impedance ..... 3 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions .... | 12⅜ in. | 10⅝ in. | 6¾ in. |
| Chassis Base ..... | 2 in. | 9¾ in. | 5⅝ in. |

Over-all Chassis Height ..... 6¾ in.
Weight ..... 11¼ lbs. net, 14 lbs. shipping
Operating Controls ..... (1) Power Switch—Volume; (2) Tuning
Tuning Drive Ratio ..... 8 to 1

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **RECEIVER ASSEMBLIES** | | 14284 | Resistor—22,000 ohms, 1/10 watt (R5) | |
| 30959 | Cable—Battery cable complete | | 12454 | Resistor—33,000 ohms, ¼ watt (R2) | |
| 30967 | Cable—Shielded volume control cable | | 14023 | Resistor—82,000 ohms, ¼ watt (R9) | |
| 12581 | Cap—Second I.F. transformer shield cap | | 14560 | Resistor—100,000 ohms, ¼ watt (R1) | |
| 12629 | Capacitor—56 mmfd. (C6) | | 12285 | Resistor—470,000 ohms, ¼ watt (R7, R8) | |
| 12723 | Capacitor—56 mmfd. (C21) | | 12679 | Resistor—2.2 meg., ¼ watt (R3) | |
| 14262 | Capacitor—110 mmfd. (C5) | | 30271 | Resistor—4.7 meg., ¼ watt (R4) | |
| 12404 | Capacitor—120 mmfd. (C7, C8) | | 13601 | Resistor—10 meg., ¼ watt (R13) | |
| 12725 | Capacitor—150 mmfd. (C13) | | 14887 | Retainer—Retainer for knob shaft | |
| 14712 | Capacitor—180 mmfd. (C10) | | 30952 | Shaft—Station selector knob shaft | |
| 13894 | Capacitor—390 mmfd. (C4, C27) | | 3682 | Shield—Tube shield | |
| 30433 | Capacitor—430 mmfd. (C25) | | 31251 | Socket—Tube socket | |
| 14393 | Capacitor—.01 mfd. (C11, C12, C15) | | 30956 | Socket—Speaker socket | |
| 4937 | Capacitor—.01 mfd. (C18) | | 14312 | Socket—Vibrator socket | |
| 30882 | Capacitor—.05 mfd. (C9) | | 14191 | Spring—Drive cord tension spring | |
| 30899 | Capacitor—0.1 mfd. (C1, C14) | | 14261 | Transformer—First I.F. transformer (L5, L6, C5, C6) | |
| 30965 | Capacitor—0.25 mfd. (C20, C26) | | 14308 | Transformer—Second I.F. transformer (L7, L8, C7, C8, C10, R5) | |
| 32152 | Capacitor—Comprising 2 sections each 15 mfd. (C16, C17) | | 32151 | Transformer—Vibrator transformer (T1, L11 C19) | |
| 30968 | Coil—"A" filter choke coil (L12) | | 14309 | Vibrator—Plug in vibrator (L10) | |
| 30950 | Coil—Antenna coil (L1, L2) | | 30958 | Volume control and on-off switch (R6, S1) | |
| 32148 | Coil—Oscillator coil (L3, L4) | | | **SPEAKER ASSEMBLIES** (Speaker 84226-3) | |
| 32147 | Condenser—2-gang variable tuning condenser (C2, C3, C22, C23, C24) | | 32163 | Cone—Speaker cone and voice coil (L9) | |
| 30877 | Cord—Drive cord | | 32162 | Speaker complete | |
| 30905 | Core—Adjustable core for I.F. transformers | | 32164 | Transformer—Output transformer (T2) | |
| 14289 | Clips—Battery clips—1 marked "+" and 1 unmarked | | | **MISCELLANEOUS ASSEMBLIES** | |
| 32186 | Dial—Dial scale, plate, and brackets assembled | | 30975 | Crystal—Station selector celluloid crystal | |
| 30701 | Drum—Tuning condenser drive cord drum with set screw | | 31355 | Knob—Tuning or volume control knob | |
| 5140 | Fuse—Battery cable fuse (F1) | | 30308 | Screw—Chassis mounting screw and washer—4 required | |
| 14635 | Indicator—Station selector indicator pointer | | 14270 | Spring—Retaining spring for knob, Stock No. 31355 | |
| 12848 | Resistor—47 ohms, ¼ watt (R14) | | | | |
| 8063 | Resistor—330 ohms, ½ watt (R11) | | | | |
| 30152 | Resistor—1,000 ohms, 1 watt (R10) | | | | |
| 30734 | Resistor—5,600 ohms, ½ watt (R12) | | | | |

### Precautionary Lead Dress

1. Capacitors C20 and C26 must be grounded with as short a lead as possible. C4 and C27 are soldered direct (no leads).

2. The "A" supply choke (L13) must be dressed clear of chassis. The H.V. secondary leads (brown and green), C18, and R12 must be dressed clear of the chassis and away from other leads.

3. The H.V. secondary mid-tap (brown-black) lead, and the brown lead from L13 to 6G6-G filament must be dressed close to the chassis and away from other parts.

4. The lead from the antenna coil (L1 and L2) to the gang must be 9 turns and kept clear of the rotor.

5. The I-F plate lead (blue) must be dressed close along edge of chassis.

6. R10 must be wired with body as close to terminal board as possible.

**Battery Charger Connections.**—The positive side of the 6-volt "A" circuit is connected to the receiver chassis, and the chassis is normally grounded. If the charger has a ground on the negative side, the ground should be removed, or changed to the positive. Do not change the length of the leads from the receiver to the battery.

# Alignment Procedure

**Cathode-ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

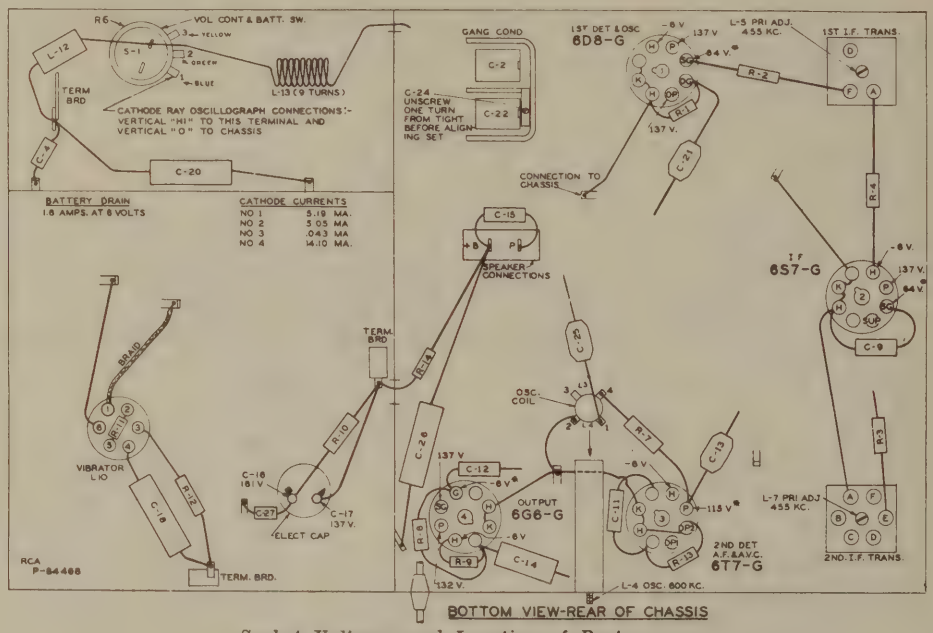
**Pre-setting Dial.**—With gang condenser in full mesh, the pointer should be horizontal.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 6S7-G I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F transformer) |
| No. 2 | 6D8-G 1st-det. grid cap, in series with .01 mfd. | 455 kc | | L5 and L6 (1st I-F transformer) |
| No. 3 | Antenna lead, in series with 200 mmfd. | 600 kc | 600 kc | L4 (oscillator) |
| No. 4 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc | C23† (oscillator) C3 (antenna) |

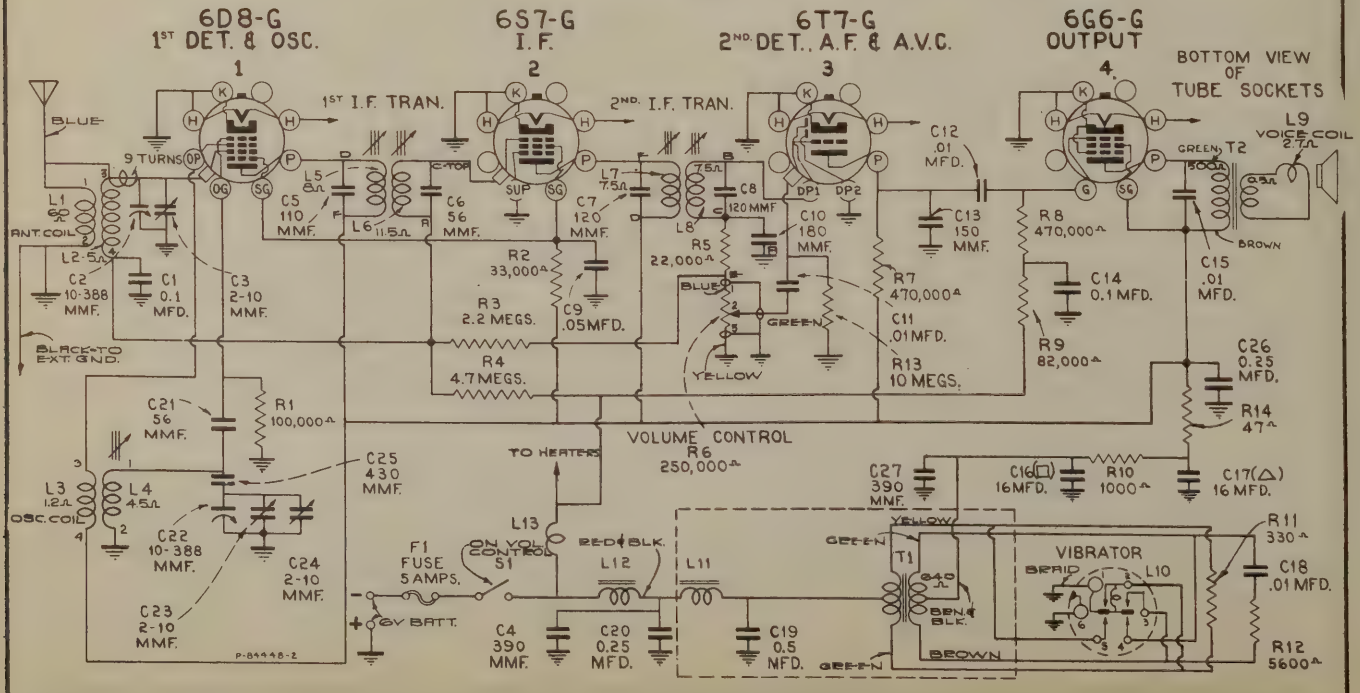
† Adjust C24 on gang condenser to one complete turn from tight before adjusting C23.

* NOTE: Values with star (*) are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with the set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with 6 volts "A."

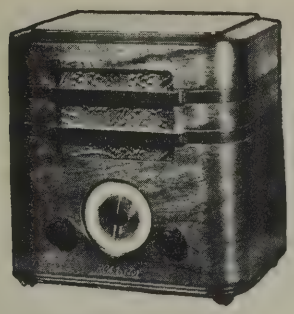

VOL CONT & BATT. SW.
CATHODE RAY OSCILLOGRAPH CONNECTIONS:- VERTICAL "HI" TO THIS TERMINAL AND VERTICAL "O" TO CHASSIS
BATTERY DRAIN 1.8 AMPS. AT 6 VOLTS
CATHODE CURRENTS
NO 1 5.19 MA.
NO 2 5.05 MA
NO 3 .043 MA
NO 4 14.10 MA.
GANG COND
1ST DET & OSC 6D8-G
1ST I.F. TRANS.
L-5 PRI ADJ. 455 KC.
C-24 UNSCREW ONE TURN FROM TIGHT BEFORE ALIGNING SET
CONNECTION TO CHASSIS
SPEAKER CONNECTIONS
I.F. 6S7-G
OSC. COIL
OUTPUT 6G6-G
2ND DET. A.F. & A.V.C. 6T7-G
2ND. I.F. TRANS.
L-7 PRI ADJ. 455 KC.
L-4 OSC. 600 KC.
VIBRATOR
ELECT CAP
TERM. BRD.
RCA P-84468
BOTTOM VIEW-REAR OF CHASSIS

*Socket Voltages and Location of Parts*

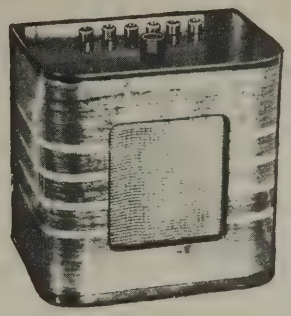


# MODELS 94X 94X1 and 94X2

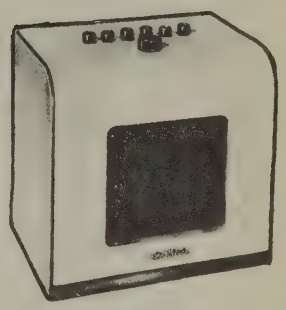
## Four-Tube, Single-Band, AC-DC, T-R-F Receivers



MODEL 94X



*Model 94X1*



*Model 94X2*

## Electrical and Mechanical Specifications

### MODEL 94x

Frequency Range ..... 530-1,800 kc
Alignment Frequency ..... 1,800 kc (ant., det.)

RADIOTRON COMPLEMENT

(1) RCA-6K7 ..... R-F Amp.
(2) RCA-6J7 ..... Detector
(3) RCA-25L6-G ..... Output
(4) RCA-25Z6-G ..... Rectifier

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-100 cycles, 50 watts
D-C Rating ..... 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted ..... 1.0 watt
Maximum ..... 1.5 watts

LOUDSPEAKER

Type ..... 5-inch Electrodynamic
Voice-Coil Impedance ..... 3 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions | 8-5/16 in. | 8⅛ inches | 5⅛ inches |
| Chassis Base | 2-7/16 in. | 6¼ inches | 4-9/16 in. |
| Over-all Chassis Height | | | 6⅝ inches |

Weight ..... 5¾ lbs. (Net), 7¼ lbs. (Shipping)
Operating Controls ..... (1) Power Switch—Volume; (2) Tuning

### MODELS 94x-1, -2

FREQUENCY RANGE

Two stations between 540-900 kc
Two stations between 680-1,200 kc
Two stations between 850-1,500 kc

RADIOTRON COMPLEMENT

(1) RCA 6K7 ..... R-F Amplifier
(2) RCA-6J7 ..... Detector
(3) RCA-25L6-G ..... Output
(4) RCA-25Z6-G ..... Rectifier

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-100 cycles, 50 watts
D-C Rating ..... 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

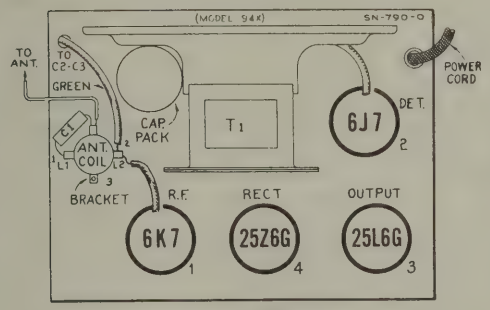
Undistorted ..... 1.0 watt
Maximum ..... 1.5 watts

LOUDSPEAKER

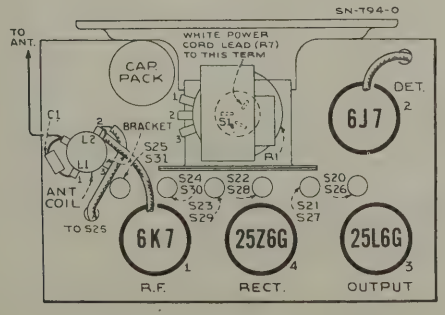
Type ..... 5-inch Electrodynamic
Voice-Coil Impedance ..... 3 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (94X1) | 8⅛ inches | 8⅛ inches | 5⅝ inches |
| Cabinet Dimensions (94X2) | 8⅛ inches | 8⅛ inches | 5⅞ inches |
| Chassis Base | 2⅜ inches | 6¼ inches | 4-9/16 in. |
| Over-all Chassis Height | | | 8 inches |

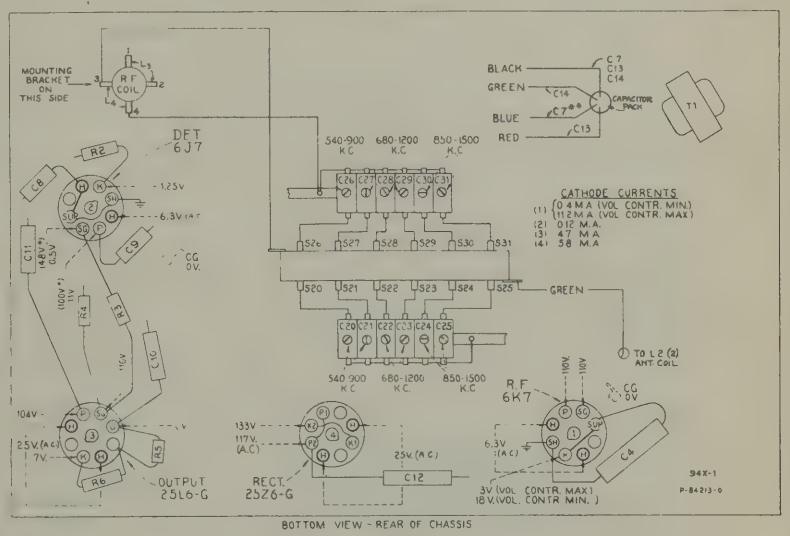
Weight ..... 6 lbs. (Net), 7¼ lbs. (Shipping)
Operating Controls ..... (1) Power Switch—Volume
(2) Six Station Buttons




MODEL 94x




MODELS 94x-1, -2




*Radiotron Socket Voltages, and Location of Parts*

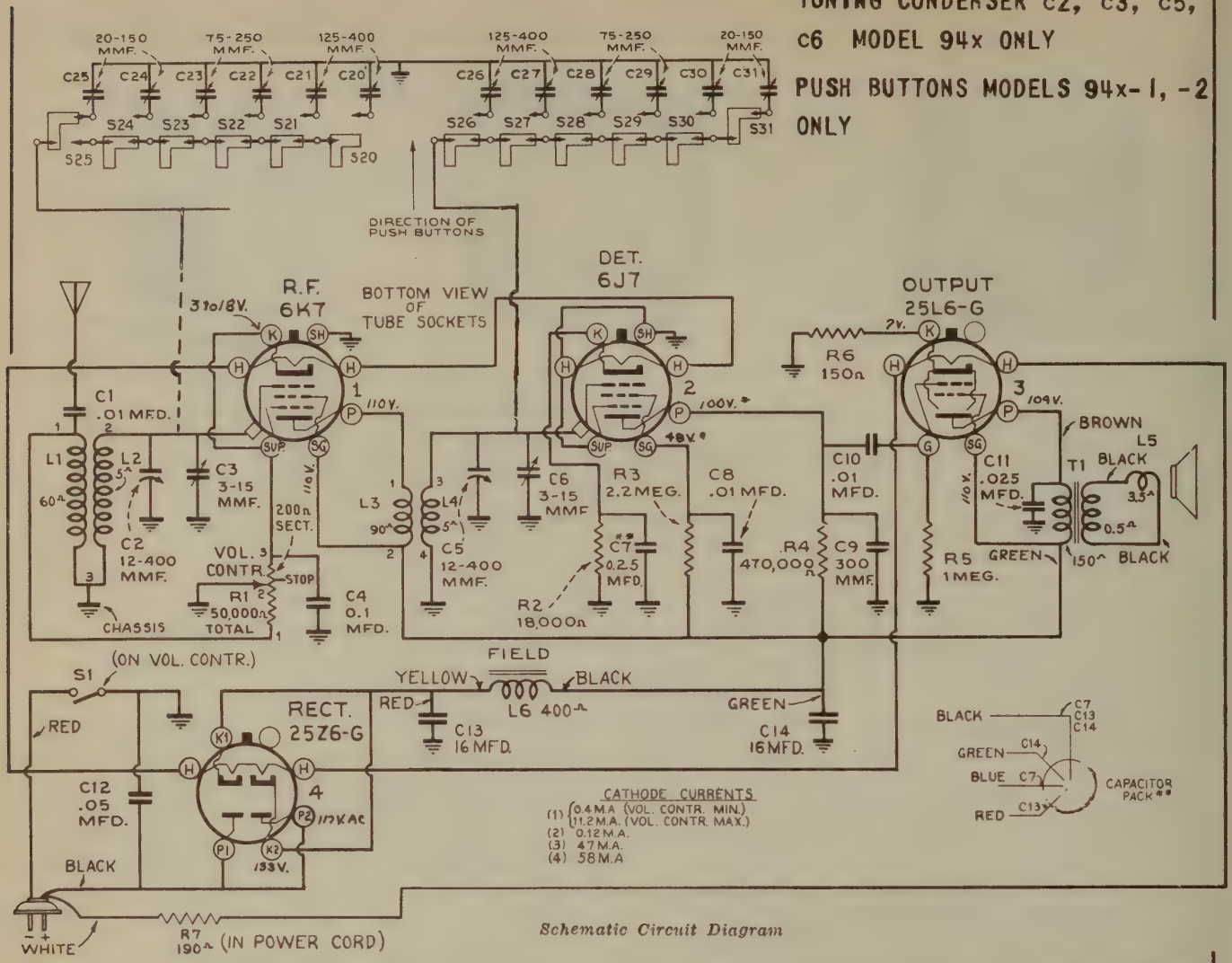
Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

* Note: Values with (*) are operating voltages.
Values not starred are actual measured voltages.

NOTE: PUSH BUTTON ASSEMBLY NOT USED WITH MODEL 94X

TUNING CONDENSER c2, c3, c5, c6 MODEL 94x ONLY

PUSH BUTTONS MODELS 94x-1, -2 ONLY




*Schematic Circuit Diagram*

** Some sets have a three-section capacitor pack (C7, C13, C14). In other sets, the pack contains only two capacitors (C13, C14); a separate 0.25 mfd. capacitor being used as C7. The pack furnished for replacement (No. 30873) is a two-section pack and does not include C7. Therefore, when an original three-section pack is replaced by No. 30873, it is necessary to connect a No. 30965 200-volt 0.25 mfd. capacitor from the cathode of the 6J7 to terminal 2 (chassis) on the volume control. This capacitor should be dressed close to the front of chassis.

## MODELS 94X, 94X1, 94X2

### Increase in Filter Capacitors:

Capacitor No. 30873 originally specified to comprise one 16 mfd. and 5 mfd. sections has been revised to include two 16 mfd. sections. All replacement capacitors will have the larger capacitor in the second section.

### Speaker Rattle:

The mounting of the dry electrolytic adjacent to the speaker is such that the cone may possibly strike it, causing a bad rattle in the reproduction. This source should always be checked before replacing speaker parts. The electrolytic clamp can be bent so as to give ample clearance.

### Residual Hum:

Residual hum level evidenced on some of these instruments, both on and between carriers, may be reduced to an insignificant intensity by making the following circuit changes:

(a) Cut off the blue lead from the dry electrolytic capacitor and disconnect it from the 6J7 cathode terminal.

(b) Install a 0.25 mfd. paper capacitor, Stock No. 30965 from the 6J7 cathode terminal to chassis ground.

Should there be a tendency for the receiver to oscillate only when tuned to a station, the lead from the 25L6G plate to the output transformer should be carefully dressed away from the 6J7 socket, preferably along the rear side of the chassis.

Model 94X Receivers above Serial No. 002600 will not require the above changes.

Models 94X1 and 94X2 above Serial No. 001400 will not require the above changes.

### Instability:

The following circuit changes should be effected when cases of instability are experienced:

(a) 94X-94X1-94X2 — Change 25L6-G plate by-pass capacitor C-11 (marked 72050-569) so as to connect from the 25L6-G plate to 25L6-G heater (H) lug adjacent to cathode (K).

(b) 94X only—Change 6J7 screen by-pass capacitor C-8 (marked 72050-503) so as to connect between 6J7 screen (SG) and the 6J7 heater (H) lug adjacent to cathode (K).

### Additional Replacement Parts:

| Stock No. | |
|---|---|
| 30873 | Capacitor—Comprising two 16 mfd. sections (C13, C14) |
| 31095 | Discs — 10 celluloid protector discs for call letter markers (Models 94X1 and 94X2 only) |

## MODEL 94x — Alignment Procedure — MODELS 94x-1, -2

Remove dial pointer by pulling it carefully off the pointer shaft. Remove chassis from cabinet.

**CAUTION: The chassis is connected to one side of the power supply. Avoid contact of chassis or parts to external ground when servicing.**

Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,800 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Assemble chassis in cabinet and press the pointer on the shaft. Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

The preferable and quickest method of adjusting the tuning capacitors for six different stations, is to employ a test-oscillator, as described below:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Determine the correct settings of the test-oscillator for these six frequencies. This is accomplished as follows: Tune in each of the six stations on any standard receiver; zero-beat the test-oscillator against each station, and note the exact setting of the oscillator in each case.
3. Reel up the antenna wire. Connect the high side of test-oscillator through a 60 mmfd. fixed capacitor to the end of the antenna wire. Clip the low side of the oscillator through a 0.1 mfd. capacitor to one of the chassis-mounting screws on the bottom of the cabinet. Tune the oscillator to the previously-determined point for the lowest-frequency station, and adjust for a strong output.
4. Turn the volume control of the push-button receiver full clockwise, and push in the left-hand end button. Using an insulated screwdriver, peak capacitors C20 and C26, at the same time reducing the output of the oscillator in order to secure a sharp peak. (Clockwise adjustment of the capacitors tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies. The range of each trimmer is three full counter-clockwise turns from the tight position. Do not unscrew more than three turns.)
5. Push in the second button from left, and adjust C21 and C27 for peak output with the oscillator tuned to the frequency of the second station.
6. Proceed in this manner to adjust each pair of capacitors for the desired frequencies.
7. Final adjustment may be made in actual reception of the stations.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL 94x** |
| | **RECEIVER ASSEMBLIES** |
| 11350 | Cap—Grid contact cap |
| 30883 | Capacitor—300 Mmfd. (C9) |
| 14393 | Capacitor—.01 Mfd. (C1, C8, C10) |
| 30938 | Capacitor—.025 Mfd. (C11) |
| 30882 | Capacitor—.05 Mfd. (C12) |
| 30899 | Capacitor—0.1 Mfd. (C4) |
| 30965 | Capacitor—0.25 Mfd. (C7) |
| 30875 | Coil—Antenna coil (L1, L2) |
| 30876 | Coil—R.F. coil (L3, L4) |
| 30871 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6) |
| 30877 | Cord—Indicator drive cord |
| 30878 | Cord—Resistance power cord complete with plug —190 ohms (R7) |
| 13199 | Lead—Antenna lead—approx. 15 ft. long |
| 30880 | Resistor—150 ohms, ½ watt (R6) |
| 13045 | Resistor—18,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) |
| 13730 | Resistor—1 Meg., ½ watt (R5) |
| 11626 | Resistor—2.2 Meg., ½ watt (R3) |
| 30879 | Shaft—Indicator drive shaft |
| 11196 | Socket—Radiotron socket |
| 30631 | Spring—Indicator drive cord tension spring |
| 30874 | Volume Control and power switch (R1, S1) |
| | **REPRODUCER ASSEMBLIES (Speaker 84202-1)** |
| 30943 | Cone—Reproducer cone and voice coil (L5) |
| 30942 | Reproducer complete |
| 30944 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30887 | Dial—Station selector dial scale |
| 30884 | Indicator—Station selector indicator pointer |
| 30885 | Knob—Station selector or volume control knob |
| 30886 | Screw—Chassis mounting screw and washer |
| 12993 | Screw—Set screw for knob Stock No. 30885 |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODELS 94x-1, -2** |
| | **RECEIVER ASSEMBLIES** |
| 30314 | Cap—Grid contact cap |
| 30977 | Capacitor—Antenna tuning capacitor bank (C20, C21, C22, C23, C24, C25) |
| 30978 | Capacitor—Det. tuning capacitor bank (C26, C27, C28, C29, C30, C31) |
| 30883 | Capacitor—300 Mmfd. (C9) |
| 14393 | Capacitor—.01 Mfd. (C1, C8, C10) |
| 30882 | Capacitor—.05 Mfd. (C12) |
| 30938 | Capacitor—.025 Mfd. (C11) |
| 30899 | Capacitor—0.1 Mfd. (C4) |
| 30965 | Capacitor—0.25 Mfd. (C7) |
| 30875 | Coil—Antenna coil (L1, L2) |
| 30876 | Coil—R.F. coil (L3, L4) |
| 30878 | Cord—Resistance power cord complete with plug —190 ohms (R7) |
| 13199 | Lead—Antenna lead—approx. 15 ft. long |
| 11196 | Socket—Radiotron socket |
| 30880 | Resistor—150 ohms, ½ watt (R6) |
| 13045 | Resistor—18,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) |
| 13730 | Resistor—1 Meg., ½ watt (R5) |
| 11626 | Resistor—2.2 Meg., ½ watt (R3) |
| 30976 | Switch—Station selector switch (S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31) |
| 30979 | Transformer—Output Transformer (T1) |
| 30874 | Volume control and power switch (R1, S1) |
| | **REPRODUCER ASSEMBLIES (Speaker 84243-1)** |
| 30943 | Cone—Reproducer cone and voice coil (L5) |
| 30980 | Reproducer complete |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30981 | Button—Station selector switch push button |
| 30885 | Knob—Volume control knob |
| 30991 | Marker—Station call letter markers |
| 30886 | Screw—Chassis mounting screw and washer |
| 12993 | Screw—Set screw for knob Stock No. 30885 |

# MODEL R-94B RECORD PLAYER

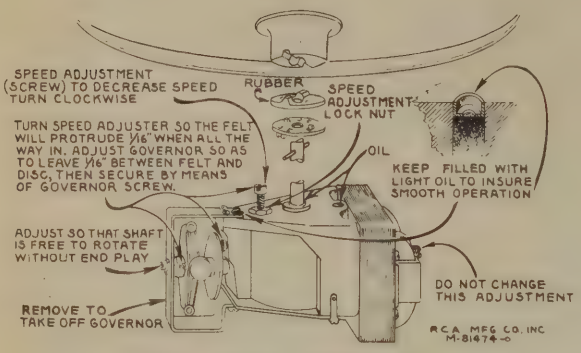

SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
RUBBER
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
RCA MFG CO. INC
M-81474-0

*Figure 1—Motor Adjustments*

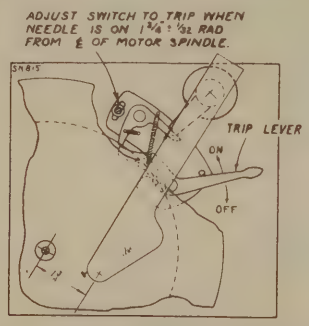



*Figure 2—Motor Switch Adjustment*

*Model R-94B*

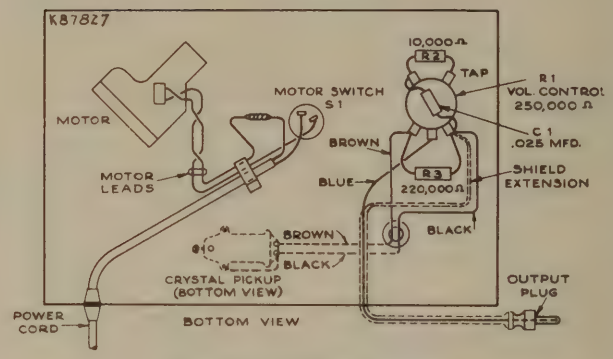



*Figure 3—Wiring Diagram*

**Low-Frequency Rumble:**

It has been found beneficial to check the tone arm mounting, in cases where "rumble" is experienced. The mounting nut will probably be found screwed too tight; and it will be necessary to loosen it about 1 complete turn.

## Electrical and Mechanical Specifications

MOTOR

| | |
|---|---|
| Type | Self-starting Induction |
| Turntable Speed | 78 r.p.m. (Adjustable) |
| Turntable Diameter | 10 inches |
| D-C Resistance | 110 volts, 60 cycles, 96.3 ohms; 110 volts, 50-60 cycles, 72.3 ohms |

POWER SUPPLY RATING

| | |
|---|---|
| A-6 | 105-125 volts, 60 cycles, 25 watts |
| A-5-6 | 105-125 volts, 50-60 cycles, 25 watts |

PICKUP

| | |
|---|---|
| Type | Crystal |
| Impedance | 80,000 ohms at 1,000 cycles |
| Volume Control Resistance | 250,000 ohms |
| Average Output Voltage | 1½ volts at 1,000 cycles across 250,000 ohm load |

CABINET DIMENSIONS

| | |
|---|---|
| Height | 7-13/16 inches |
| Depth | 12-31/32 inches |
| Width | 15¼ inches |
| Net Weight | 12¾ pounds |
| Shipping Weight | 18 pounds |

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES** |
| 11703 | Governor—Motor governor complete |
| 30475 | Motor—105-125 volts, 50-60 cycle (M50) |
| 14800 | Motor—105-125 volts, 60 cycle (M50) |
| | **PICKUP AND ARM ASSEMBLIES** |
| 31212 | Base—Pickup arm pivot shaft, trip lever, and base assembly |
| 31050 | Crystal—Pickup crystal and needle screw |
| 31211 | Pickup and arm complete—less rubber mounting and nut |
| 12539 | Screw—Pickup needle screw |
| | **MISCELLANEOUS ASSEMBLIES** |
| 14803 | Brake—Automatic brake complete |
| 4870 | Capacitor—.025 mfd. (C1) |
| 11704 | Damper—Turntable rubber damper and damper plate |
| 31051 | Foot—Rubber foot for cabinet |
| 13085 | Hinge—Lid hinge |
| 3961 | Knob—Volume control knob |
| 31054 | Mounting—Pickup mounting nut, washer, and rubber cushion |
| 14559 | Resistor—10,000 ohms, ½ watt (R2) |
| 12264 | Resistor—220,000 ohms, ½ watt (R3) |
| 13573 | Screw—Motor mounting screws, washers and rubber cushions |
| 30100 | Spring—Tension springs for automatic brake—one long and one short spring |
| 31213 | Support—Lid support |
| 14804 | Switch—Motor switch—located on automatic brake (S1) |
| 14801 | Turntable |
| 31108 | Volume control (R1) |
| | **ACCESSORIES** |
| 9824 | Switch and cable assembly—for use with receivers requiring a switch for changing from Phonograph to Radio—complete with mounting screws, washers, and knob |
| 14179 | Adapter—Special octal base adapter with grid connection (pin No. 5) split and a 2,700 ohm resistor internally connected from cathode (pin No. 8) to shell (pin No. 1), 3 terminals on side |
| 14180 | Adapter—Special octal base adapter with grid connection (pin No. 5) split, 2 terminals on side |

# MODELS 95T and 95T1

## Five-Tube, Single-Band, A-C, Superheterodyne Receiver

### MODEL 95T1

**Technical Information and Service Data:**

Model 95T1 is identical to Model 95T except for cabinet styling. All Service Data for Model 95T apply to Model 95T1.

**Fidelity Change:**

Capacitor C-15, connected across the output transformer primary circuit, may be increased from .015 mfd. to .025 mfd. if accentuation of the lower audio frequency range is desired. Some production instruments will have this change already applied, therefore, circuit-note diagrams should be revised accordingly. The .025 mfd. capacitor is available as Stock No. 4870.

**Microphonic Howl:**

In order to minimize any "howl" that may occur at high volume, on very strong stations, the blue lead which runs from the 6A8 oscillator plate terminal to the oscillator coil should be cut as short as possible and kept separated from the chassis, tuning condenser and other leads.

**Replacement Cone for Loudspeaker:**

The replacement cone No. 30940 being supplied for the 95T and 95T1 loudspeaker has a modified type (circular) of center suspension providing 360 degrees of support as compared to the original two point spider. When using the present cone on original speaker, it will be necessary to add a metal center suspension plate with a felt washer between it and the speaker frame.

The metal suspension plate and the felt washer are provided with the No. 30940 cone.

*Model 95T*

## Electrical and Mechanical Specifications

Frequency Range ..... 540 to 1,750 kc
R-F Alignment Frequency ..... 1,500 kc (osc., ant.)
Intermediate Frequency ..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8 ..... First-Det., Osc.
(2) RCA-6K7 ..... Intermediate Amp.
(3) RCA-6Q7-G ..... Second-Det., A-F, A.V.C.
(4) RCA-6K6-G ..... Power Output
(5) RCA-5Y3-G ..... Rectifier

Dial lamp ..... Mazda No. 46, 6.3 volts, 0.25 amps.

POWER OUTPUT (125-volt, a-c supply)

Undistorted ..... 1.0 watt
Maximum ..... 2.0 watts

LOUDSPEAKER

Type ..... 5-inch Electrodynamic
Voice-coil Impedance ..... 3.4 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A ..... 105-125 volts, 50-60 cycles, 50 watts
Rating B ..... 105-125 volts, 25-60 cycles, 50 watts
Rating C ..... 105-125/200-250 volts, 50-60 cycles, 50 watts

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions | 8 inches | 11 inches | 5-15/16 in. |
| Chassis Base | 2⅜ inches | 10-1/16 in. | 4⅝ inches |

Over-all Chassis Height ..... 6¾ inches
Weight (net) ..... 9½ pounds
Weight (shipping) ..... 10⅞ pounds
Operating Controls ..... (1) Power Switch—Volume, (2) Tuning

## Alignment Procedure

**Cathode-ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output meter alignment.** If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-oscillator.** For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

**Pre-setting dial.** With gang condenser in full mesh, move dial pointer to coincide with horizontal lines. This is a friction adjustment.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F Transformer) |
| No. 2 | 6A8 1st-det. grid cap, in series with .01 mfd. | 455 kc | | L5 and L6 (1st I-F Transformer) |
| No. 3 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc (Top of "1" in 150) | C6* (oscillator) C3 (antenna) |

* Trimmer C18 on gang condenser should be screwed clockwise for maximum capacity before adjusting C6.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 30892 | Bracket—Station selector dial scale holder with indicator shaft and drive bearing assembly |
| 11350 | Cap—Grid connector cap |
| 12723 | Capacitor—56 Mmfd. (C4) |
| 30904 | Capacitor—100 Mmfd. (C7, C8, C9, C10) |
| 13003 | Capacitor—180 Mmfd. (C12) |
| 5107 | Capacitor—.0025 Mfd. (C14) |
| 4858 | Capacitor—.01 Mfd. (C13) |
| 11315 | Capacitor—.015 Mfd. (C15) |
| 4886 | Capacitor—.05 Mfd. (C11) |
| 30899 | Capacitor—0.1 Mfd. (C1) |
| 30898 | Capacitor—Comprises two 5 Mfd. sections (C16, C17) |
| 30894 | Coil—Antenna coil (L1, L2) |
| 30895 | Coil—Oscillator coil (L3, L4) |
| 30890 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C18) |
| 30877 | Cord—Indicator drive cord |
| 30905 | Core—Adjustable core for I.F. transformers |
| 30893 | Dial—Station selector dial scale and lamp bracket assembly |
| 30896 | Indicator—Station selector indicator pointer |
| 5226 | Lamp—Dial lamp |
| 11361 | Resistor—68 ohms, ½ watt (R10) |
| 5164 | Resistor—560 ohms, ½ watt (R9) |
| 8072 | Resistor—33,000 ohms, ½ watt (R3) |
| 5029 | Resistor—56,000 ohms, ½ watt (R2) |
| 12199 | Resistor—270,000 ohms, ½ watt (R7) |
| 11172 | Resistor—470,000 ohms, ½ watt (R8) |
| 12679 | Resistor—2.2 Meg., ½ watt (R4, R6) |
| 14114 | Socket—Dial lamp socket assembly |
| 11196 | Socket—Radiotron socket |
| 30631 | Spring—Indicator drive cord tension spring |
| 30902 | Transformer—First I.F. transformer (L5, L6, C7, C8) |
| 30903 | Transformer—Second I.F. transformer (L7, L8, C9, C10) |
| 30889 | Transformer—Power transformer 105-125 volts, 25-60 cycle (T1) |
| 30888 | Transformer—Power transformer 110 and 220 volts, 50-60 cycle (T1) |
| 30891 | Volume Control and power switch (R5, S1) |
| | **REPRODUCER ASSEMBLIES (Speaker 84202-2)** |
| 30940 | Cone—Reproducer cone and voice coil (L9) |
| 30939 | Reproducer complete |
| 30941 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30901 | Crystal—Station selector crystal |
| 30863 | Knob—Station selector or power switch knob |
| 30886 | Screw—Chassis mounting screw and washer |
| 30900 | Spring—Retaining spring for knob Stock No. 30863 |

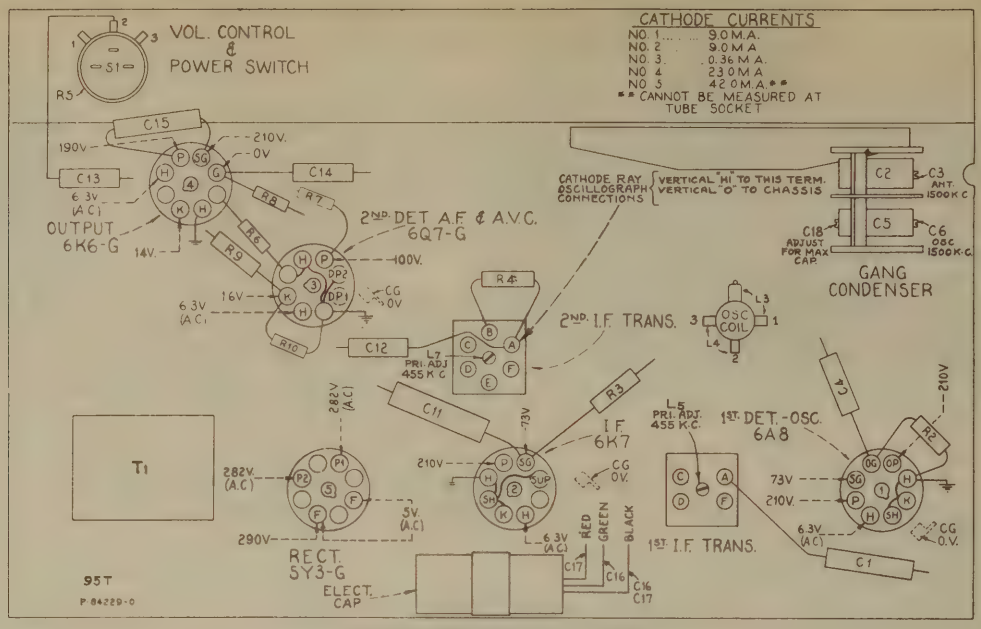



*Figure 2—Radiotron Socket Voltages and Location of Parts*

* Note: Values with star (*) are operating voltages.
Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, 250, and 500 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.

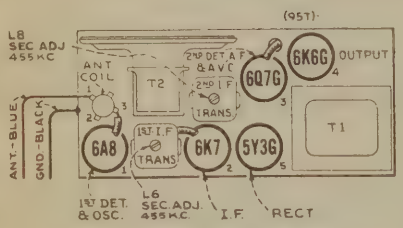
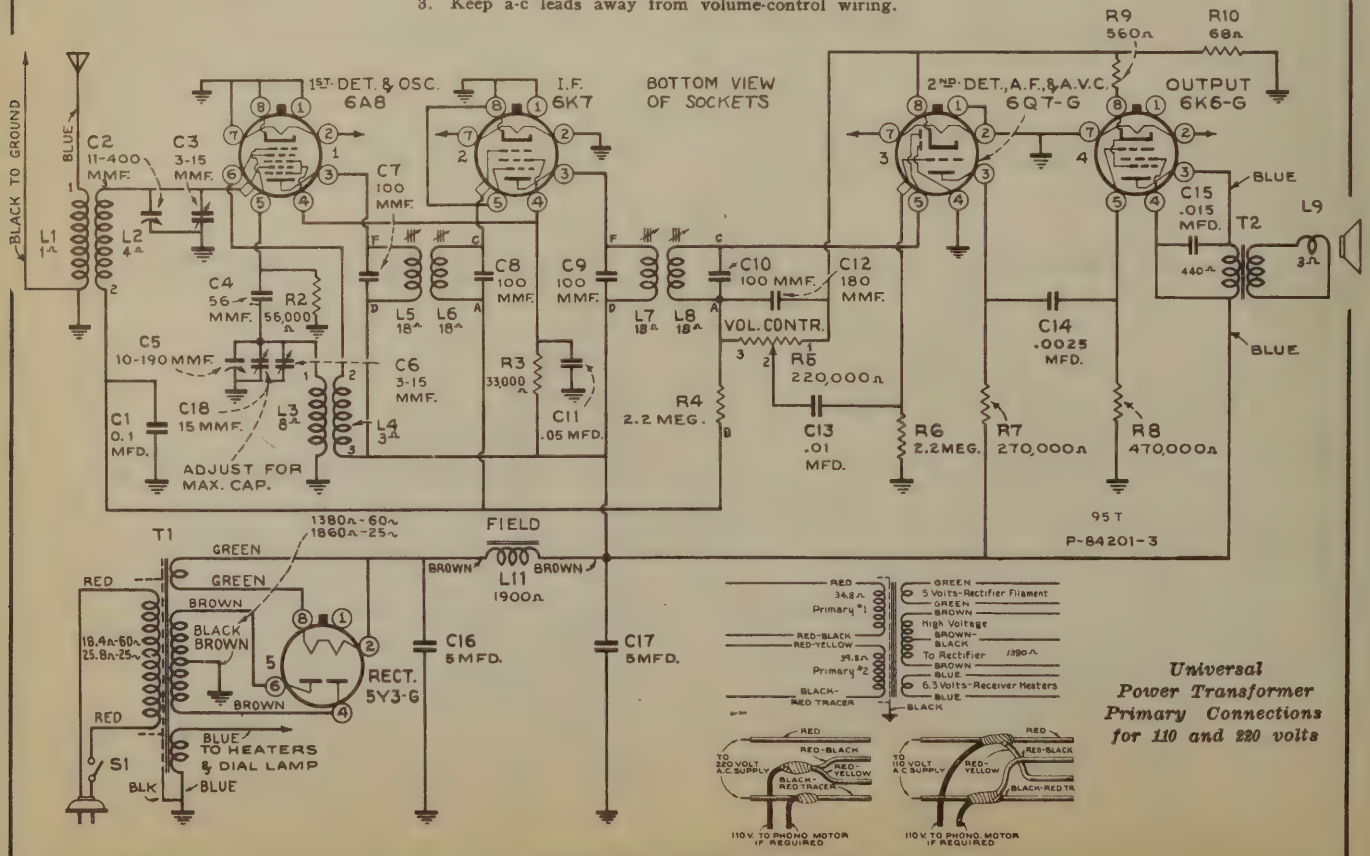



*Figure 1—Radiotron and Trimmer Locations*

## Precautionary Lead Dress

1. Keep lead from high side of volume control (contact 3) away from capacitor in plate circuit of output tube.
2. Keep dial lamp leads away from 6Q7-G grid lead.
3. Keep a-c leads away from volume-control wiring.

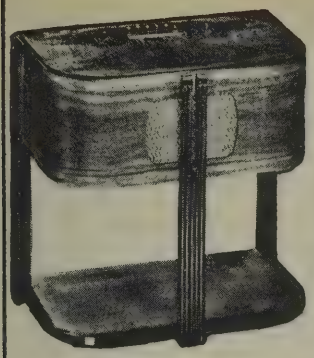



*Universal Power Transformer Primary Connections for 110 and 220 volts*

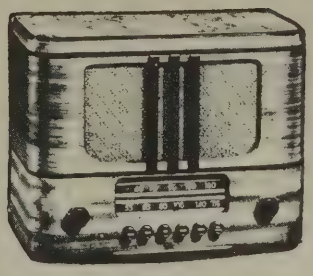
*Figure 3—Schematic Circuit Diagram*

# MODELS 95T5, 96E, 96T and 96T1

## Five- and Six-Tube, Electric-Tuning, Single-Band, A-C, Superheterodyne Receivers



*Model 96E*



*Model 95T5*

*Model 96T*

*Model 96T1*

## Electrical Specifications

Frequency Range ..... 540-1,720 kc
One Station between approximately 550-980 kc (Button No. 1—left)
Two Stations between approximately 650-1,080 kc (Buttons 2 and 3)
Two Stations between approximately 850-1,500 kc (Buttons 4 and 5)

R-F Alignment Frequency ..... 1,500 kc (osc., ant.)

Intermediate Frequency ..... 455 kc

RCA Tube Complement

| Model 95T5 | | Models 96E, 96T, and 96T1 | |
|---|---|---|---|
| (1) RCA-6A8-G | First Detector—Oscillator | (1) RCA-6A8-G | First Detector—Oscillator |
| (2) RCA-6K7 | I-F Amplifier | (2) RCA-6K7 | I-F Amplifier |
| (3) RCA-6Q7-G | Second Det., A.V.C., and A-F Amp. | (3) RCA-6H6 | Second Det., and A.V.C. |
| (4) RCA-6K6-G | Power Output | (4) RCA-6F5 | Audio Voltage Amplifier |
| (5) RCA-5Y3-G | Full-Wave Rectifier | (5) RCA-6K6-G | Power Output |
| | | (6) RCA-5Y3-G | Full-Wave Rectifier |

Pilot Lamp (1) ..... Mazda 44, 6.3 volts, .25 amp.

| Power Output | Model 95T5 | Models 96E, 96T, 96T1 |
|---|---|---|
| Undistorted | 1.0 watts | 2 watts |
| Maximum | 1.5 watts | 4 watts |

Power Supply Ratings

| | | Model 95T5 | Models 96E, 96T, 96T1 |
|---|---|---|---|
| Rating A | 105-125 volts, 50-60 cycles | 50 watts | 75 watts |
| Rating B | 105-125 volts, 25-60 cycles | 50 watts | 75 watts |
| Rating C | 105-125/200-250 volts, 50-60 cycles | 50 watts | 75 watts |

| Loudspeaker (Electrodynamic) | 95T5 | 96E | 96T | 96T1 |
|---|---|---|---|---|
| Diameter (inches) | 5 | 6 | 5 | 6 |
| V. C. Impedance at 400 cycles (ohms) | 3.1 | 2.6 | 5.0 | 2.6 |

## MODELS 95T5, 96E, 96T, 96T1, 97X

**Changes in 2nd and 3rd Production:**

| | 1ST PRODUCTION | 2ND PRODUCTION (Chassis Stamped "MOD") | 3RD PRODUCTION (Chassis Stamped "M") |
|---|---|---|---|
| **PUSH-BUTTON FREQUENCY RANGES** | | | |
| Button No. 1 (left) | 550- 980 kc | 550- 980 kc | 550- 980 kc |
| Button No. 2 | 650-1,080 kc | 550- 980 kc | 550- 980 kc |
| Button No. 3 | 650-1,080 kc | 650-1,080 kc | 690-1,225 kc |
| Button No. 4 | 850-1,500 kc | 850-1,500 kc | 850-1,500 kc |
| Button No. 5 | 850-1,500 kc | 850-1,500 kc | 850-1,500 kc |
| **ANTENNA TRIMMER-BANK CAPACITANCE** | | | |
| C20 | 100-400 mmfd. | 100-400 mmfd. | 100-400 mmfd. |
| C21 | 70-290 mmfd. | 100-400 mmfd. | 100-400 mmfd. |
| C22 | 70-290 mmfd. | 70-290 mmfd. | 40-250 mmfd. |
| C23 | 20-160 mmfd. | 20-160 mmfd. | 20-160 mmfd. |
| C24 | 20-160 mmfd. | 20-160 mmfd. | 20-160 mmfd. |
| | **Stock No.** | **Stock No.** | **Stock No.** |
| Capacitor—Antenna trimmer capacitor bank (includes C20, C21, C22, C23, C24) | 31416 | 32066 | 32339 |
| Capacitor—Electrolytic Capacitor* (C16, C17) | | | |
| 5 and 5 mfd. (95T5 only) | 31423 | 31423 | 32341 |
| 8 and 8mfd. (96T, 96T1, 96E only) | 31424 | 31424 | .... |
| 10 and 10 mfd. (96T, 96T1, 96E only) | .... | .... | 32342 |
| 16 and 16 mfd. (97X only) | 31479 | 31479 | 31479 |
| Coil—Antenna coil (L1, L2)** | 30894 | 30894 | 32338 |
| Coil—Oscillator coil (L12) | 31415 | 31415 | 31415 |
| Coil—Oscillator coil (L13) | 31384 | 31415 | 31415 |
| Coil—Oscillator coil (L14) | 31384 | 31384 | 32340 |
| Coil—Oscillator coil (L15) | 31383 | 31383 | 31383 |
| Coil—Oscillator coil (L16) | 31383 | 31383 | 31383 |

* Electrolytic capacitors Stock Nos. 31423, 31424 and 31479 have leads; Stock Nos. 32341 and 32342 have lug contacts, C16 identified by a triangle, and C17 identified by a square.

** Stock No. 30894 antenna coil has a high-frequency primary (1 ohm d-c resistance) for use with a normal-length antenna. Stock No. 32338 antenna coil has a low-frequency primary (35 ohms d-c resistance) for use with a short antenna. No. 32338 may be used as replacement for No. 30894.

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Marks.** — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

**Drum and Dial Indicator Adjustment.**—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

**After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.**

After completion of alignment, seal the i-f core-adjustment screws with household cement.

For additional details, refer to booklet, "RCA Victor Receiver Alignment."

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F Trans.) |
| 2 | 6A8-G grid cap, in series with .01 mfd. | 455 kc | | L5 and L6 (1st I-F Trans.) |
| 3 | Antenna lead (blue) in series with 200 mmf. | 1,500 kc | 1,500 kc calibration mark. | C6 (osc.)* C3 (ant.) |
| 4 | Follow "Adjustments for Electric Tuning." | | | |

* The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.

**Low-Frequency Alignment:**

Where additional sensitivity is desired on these single band receivers, it can be obtained by alignment of the tuning condenser at 600 KC and re-alignment of the trimmer at 1,500 KC as follows:

(a) Check alignment of antenna coil with "Tuning Wand" at 600 KC. If brass end gives increase in signal, bend rotor plates of antenna section of tuning condenser outward to produce maximum peak output. If magnetite end gives increase in signal, bend plates of oscillator section of tuning condenser to obtain maximum output.

(b) Re-align 1,500 KC antenna and oscillator trimmers in the usual manner.

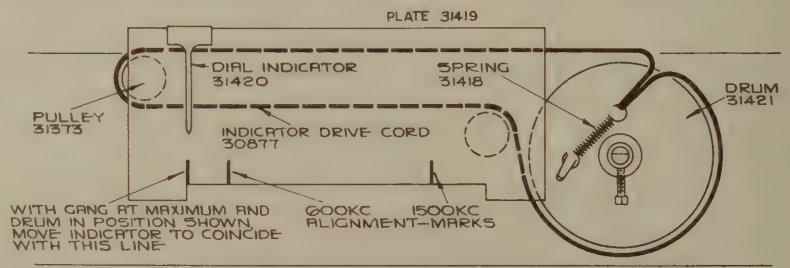


PLATE 31419
DIAL INDICATOR 31420
SPRING 31418
DRUM 31421
PULLEY 31373
INDICATOR DRIVE CORD 30877
WITH GANG AT MAXIMUM AND DRUM IN POSITION SHOWN, MOVE INDICATOR TO COINCIDE WITH THIS LINE
600KC 1500KC ALIGNMENT-MARKS

**DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY**

*Dial-Indicator and Drive Mechanism*

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

# Adjustments for Electric Tuning

These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

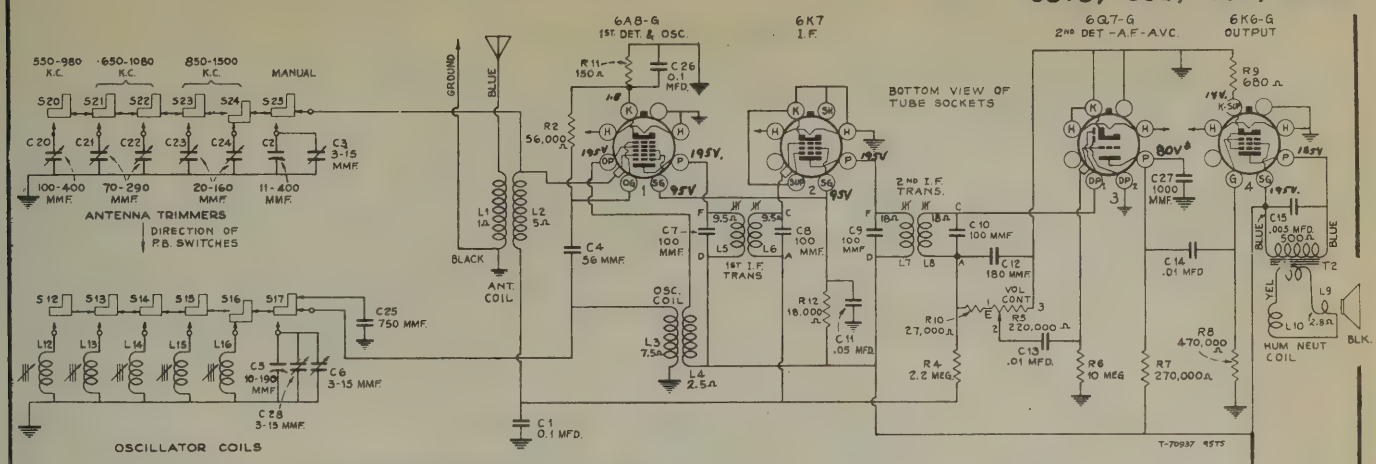
1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (right-hand) button, and manually tune in the first station on the list.
3. Push in station-button No. 1 (left-hand) and adjust No. 1 oscillator core (L12) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C20) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

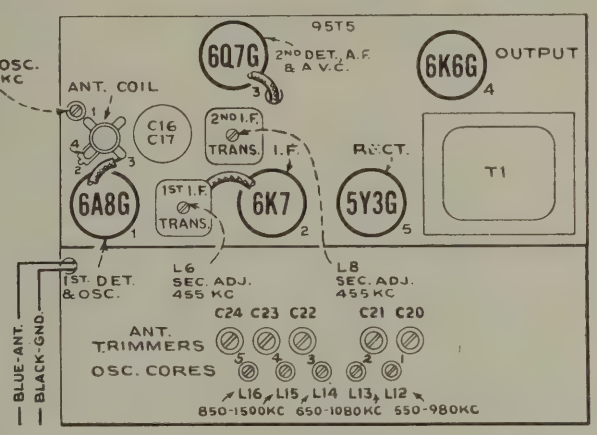
**(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)**

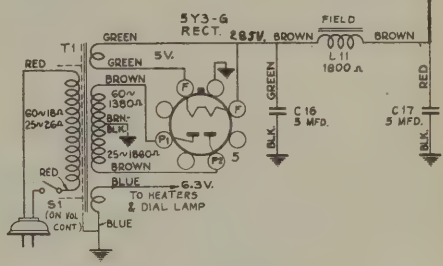
6. Make a final careful adjustment of the oscillator cores and antenna trimmers, using one or two feet of wire as an antenna to ensure sharp peaking.

**Precautionary Lead Dress.—**

1. Dress green lead from antenna coil to switch away from the chassis and gang.
2. Dress green leads from oscillator coils away from the adjustment screws.
3. Dress leads in power-transformer primary circuit to left end of chassis.
4. In 95T5, C27 must be dressed close to chassis and clear of rotor.
5. In 96E, 96T, and 96T1, dress ground bus from heater of 6H6 close to chassis, and dress blue lead from 2nd I-F transformer to volume control close to chassis.

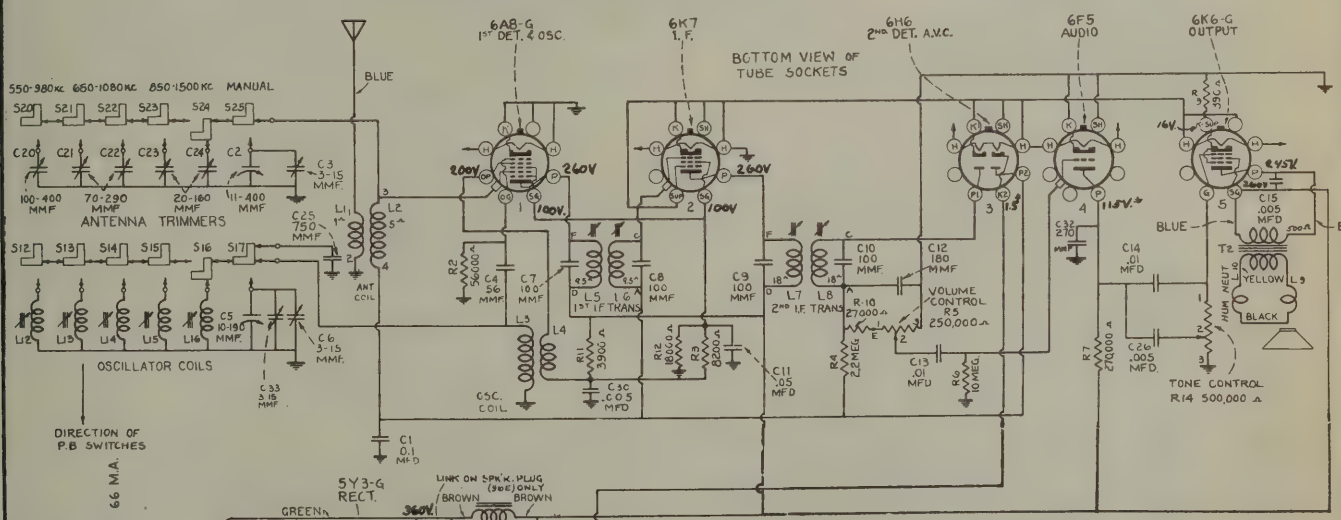


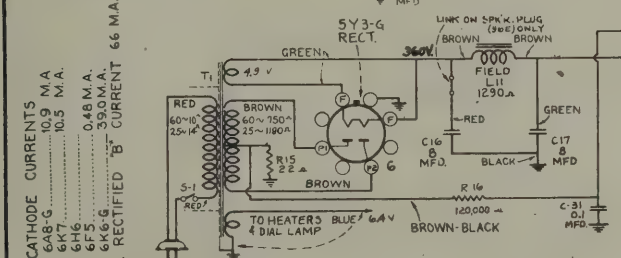



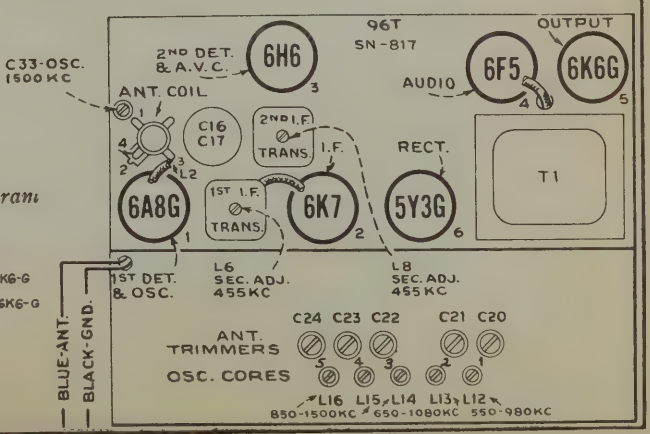




*Model 95T5 Schematic Circuit Diagram*

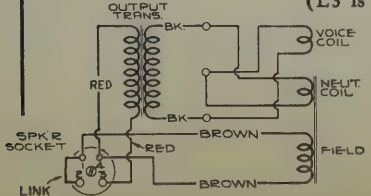
CATHODE CURRENTS
(1) 6A8-G - - - - - - - 9 M.A.
(2) 6K7 - - - - - - - 12.1 M.A.
(3) 6Q7-G - - - - - 0.48M.A.
(4) 6K6-G - - - - - - 22 M.A.
TOTAL RECTIFIED 'B' CURRENT 44 M.A.

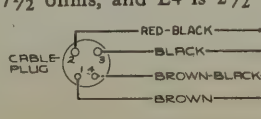


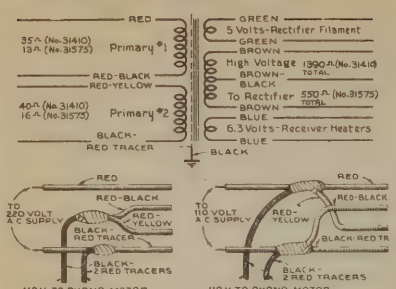




*Models 96E, 96T, and 96T1 Schematic Circuit Diagram*
(L3 is 7½ ohms, and L4 is 2½ ohms)




Connections and Colors of Loudspeaker and Cable in Model 96E.




Replacement Universal Power Transformer. (Stock No. 31410 in 95T5. Stock No. 31575 in 96E, 96T, and 96T1.)

## MODEL 96E

SPEAKER STAMPED 84308-4:
Replacement parts:

Stock No.

32918 Cone - Cone and voice coil
32919 Coil - Field coil
32920 Transformer - output trans.
31302 Plug - 4 contact male plug

Voice coil impedance 2.2 ohms
Field coil resistance 1290 ohms

## MODEL 96E

ADDITIONAL REPLACEMENT PART
Stock No.
14618 Coil - Field coil for speaker stamped 84308-1

## MODEL 96T1

**Speaker Stamped 84327-3:**

The following replacement parts apply to speaker stamped 84327-3:

**Stock No.**

32586 Cone—Speaker cone and voice coil
32587 Coil—Field coil
31663 Speaker complete
32588 Transformer—Output transformer

Voice coil impedance 2.2 ohms at 400 cycles; field d.c. resistance 1,800 ohms.

Primary d.c. resistance of output transformer 500 ohms.

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 31416 | Capacitor—trimmer capacitor bank (C20, C21, C22, C23, C24) |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30904 | Capacitor—100 mmfd. (C7, C8, C9, C10) |
| 13003 | Capacitor—180 mmfd. (C12) |
| 12488 | Capacitor—270 mmfd. (C32)—Models 96T, 96T1 and 96E only |
| 31435 | Capacitor—750 mmfd. (C25) |
| 12635 | Capacitor—1,000 mmfd. (C27)—Model 95T5 only |
| 4838 | Capacitor—.005 mfd. (C15, C26, C30) (C26, C30—Models 96T, 96T1 and 96E only) |
| 14393 | Capacitor—.01 mfd. (C13, C14) |
| 4886 | Capacitor—.05 mfd. (C11) |
| 30899 | Capacitor—0.1 mfd. (C1, C26, C31) (C26 Model 95T5 only) (C31 Models 96T, 96T1 and 96E only) |
| 31423 | Capacitor—Comprising 2 sections 5 mfd. each (C16, C17)—Model 95T5 only |
| 31424 | Capacitor—Comprising 2 sections 8 mfd. each (C16, C17)—Models 96T, 96T1 and 96E only |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 30894 | Coil—Antenna coil (L1, L2) |
| 31098 | Coil—Oscillator coil (L3, L4) |
| 31383 | Coil—Oscillator coil (L15, L16) |
| 31384 | Coil—Oscillator coil (L13, L14) |
| 31415 | Coil—Oscillator coil (L12) |
| 31097 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C28)—Model 95T5 only |
| 31422 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C33)—Models 96T, 96T1 and 96E only |
| 31413 | Control—Volume control, tone control, and power switch (R5, R14, S1)—Models 96T, 96T1 and 96E only |
| 30877 | Cord—Indicator drive cord |
| 30905 | Core—Adjustable core for i-f transformers |
| 31386 | Core—Adjustable core and stud for oscillator coils |
| 31421 | Drum—Variable condenser drive cord drum |
| 31420 | Indicator—Station selector indicator pointer |
| 11891 | Lamp—Dial lamp |
| 31419 | Plate—Dial color plate |
| 5040 | Plug—4-contact female plug for speaker cable—Model 96E only |
| 31373 | Pulley—Indicator drive cord pulley |
| 31425 | Resistor—Voltage divider comprising one 22 ohm, one 18,000 ohm, one 8,200 ohm, and one 3,900 ohm sections (R3, R11, R12, R15)—Models 96T, 96T1 and 96E only |
| 13428 | Resistor—150 ohms, ½ watt (R11)—Model 95T5 only |
| 31388 | Resistor—390 ohms, 1 watt (R9)—Models 96T, 96T1 and 96E only |
| 31024 | Resistor—680 ohms, ½ watt (R9)—Model 95T5 only |
| 30151 | Resistor—18,000 ohms, 1 watt (R12)—Model 95T5 only |
| 12738 | Resistor—27,000 ohms, ½ watt (R10) |
| 12286 | Resistor—56,000 ohms, ½ watt (R2) |
| 13734 | Resistor—120,000 ohms, ½ watt (R16)—Models 96T, 96T1 and 96E only |
| 12199 | Resistor—270,000 ohms, ½ watt (R7) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8)—Model 95T5 only |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R6) |
| 14887 | Retainer—Pulley retainer |
| 14350 | Screw—No. 8-32 square head set screw for drum Stock No. 31421 |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Radiotron socket |
| 31418 | Spring—Indicator drive cord tension spring |
| 31414 | Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25) |
| 31412 | Volume control and power switch (R5, S1)—Model 95T5 only |
| 30957 | Transformer—First i-f transformer (L5, L6, C7, C8) |
| 30903 | Transformer—Second i-f transformer (L7, L8, C9, C10) |
| 31409 | Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)—Model 95T5 only |
| 31574 | Transformer—Power transformer 100-120 volts, 25-60 cycle (T1)—Models 96T, 96T1 and 96E only |
| 31408 | Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)—Model 95T5 only |
| 31380 | Transformer—Power transformer 100-120 volts, 50-60 cycle (T1)—Models 96T, 96T1 and 96E only |
| 31410 | Transformer—Power transformer 100-120 and 200-240 volts, 50-60 cycle (T1)—Model 95T5 only |
| 31575 | Transformer—Power transformer 100-120 and 200-240 volts, 50-60 cycle (T1)—Models 96T, 96T1 and 96E only |
| | **SPEAKER ASSEMBLIES Model 95T5 (Speaker 84326-2)** |
| 31473 | Cone—Speaker cone and voice coil (L9) |
| 31472 | Speaker—Complete |
| 31474 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES Model 96T (Speaker 84326-1)** |
| 31476 | Cone—Speaker cone and voice coil (L9) |
| 31475 | Speaker—Complete |
| 31477 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES Model 96T1 (Speaker 84327-1)** |
| 31443 | Cone—Speaker cone and voice coil (L9) |
| 31477 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES Model 96E (Speaker 84308-1)** |
| 31443 | Cone—Speaker cone and voice coil (L9) |
| 31442 | Speaker—Complete |
| 31444 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31428 | Button—Station selector switch push button |
| 31429 | Dial—Station selector dial scale |
| 31095 | Discs—10 celluloid protector discs for call letter markers |
| 31667 | Escutcheon—Dial escutcheon—Model 96T1 only |
| 30773 | Knob—Volume control or tuning condenser large knob—Models 96T, 96T1 and 96E only |
| 31355 | Knob—Tuning condenser small knob—Models 96T, 96T1 and 96E only |
| 30863 | Knob—Volume control and power switch, or tuning condenser knob—Model 95T5 only |
| 31391 | Knob—Tone control and power switch knob—Models 96T, 96T1 and 96E only |
| 30991 | Marker—Station call letter markers |
| 14270 | Spring—Retaining spring for knob Stock Nos. 30773 and 31355 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |
| 30900 | Spring—Retaining spring for knob Stock No. 30863 |

# MODEL 95T5LW

Chassis No. RC-348F

## Five-Tube, Electric-Tuning, A-C, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

Standard Broadcast (Manual Tuning) ..... 540-1,720 kc

Push Button Ranges:

Two stations between approximately 150- 300 kc
One station between approximately 550- 980 kc
One station between approximately 650-1,080 kc
One station between approximately 850-1,500 kc

Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6A8-G ..... First Detector-Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6Q7-G... 2nd Detector, A.V.C., and A-F Amplifier
(4) RCA-6K6-G ..... Power Output
(5) RCA-5Y3-G ..... Full-Wave Rectifier

POWER SUPPLY RATINGS

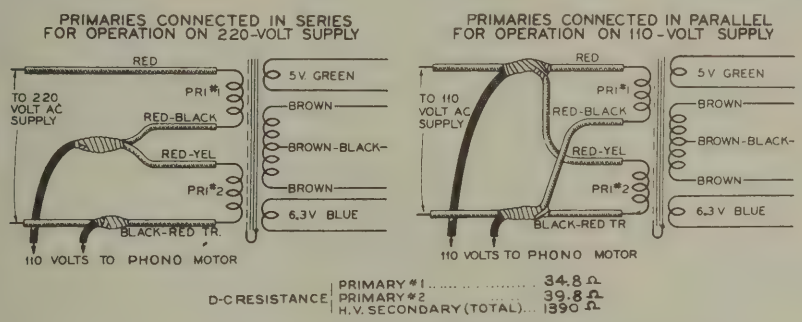
Rating A ..... 105-125 volts, 50-60 cycles, 50 watts
Rating C ..... 100-120, 200-240 volts, 50-60 cycles, 50 watts

POWER OUTPUT

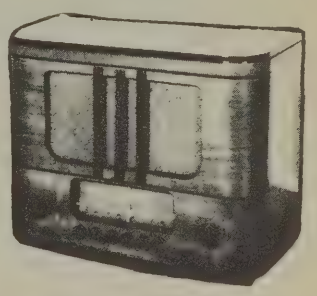
Undistorted ..... 1.0 watt
Maximum ..... 1.5 watts

LOUDSPEAKER

Type ..... 5-inch Electrodynamic
V.C. Impedance ..... 3.1 ohms at 400 cycles




*Replacement Universal Power Transformer*



*Model 95T5LW*

**REFER TO MODEL 95T5 FOR ALIGNMENT PROCEDURE**

**Precautionary Lead Dress.—**

1. Blue, green, and black leads to the volume control should be dressed away from the 6K6-G socket and from leads to this socket.
2. Leads to the power transformer should be dressed toward the end of the chassis and away from wires to the push button assembly.
3. Power cord lead should be dressed toward the end of the chassis.

## Adjustments for Electric Tuning

This model has six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations. The station buttons connect to separate magnetite-core coils and trimmers and to separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for preliminary adjustments.

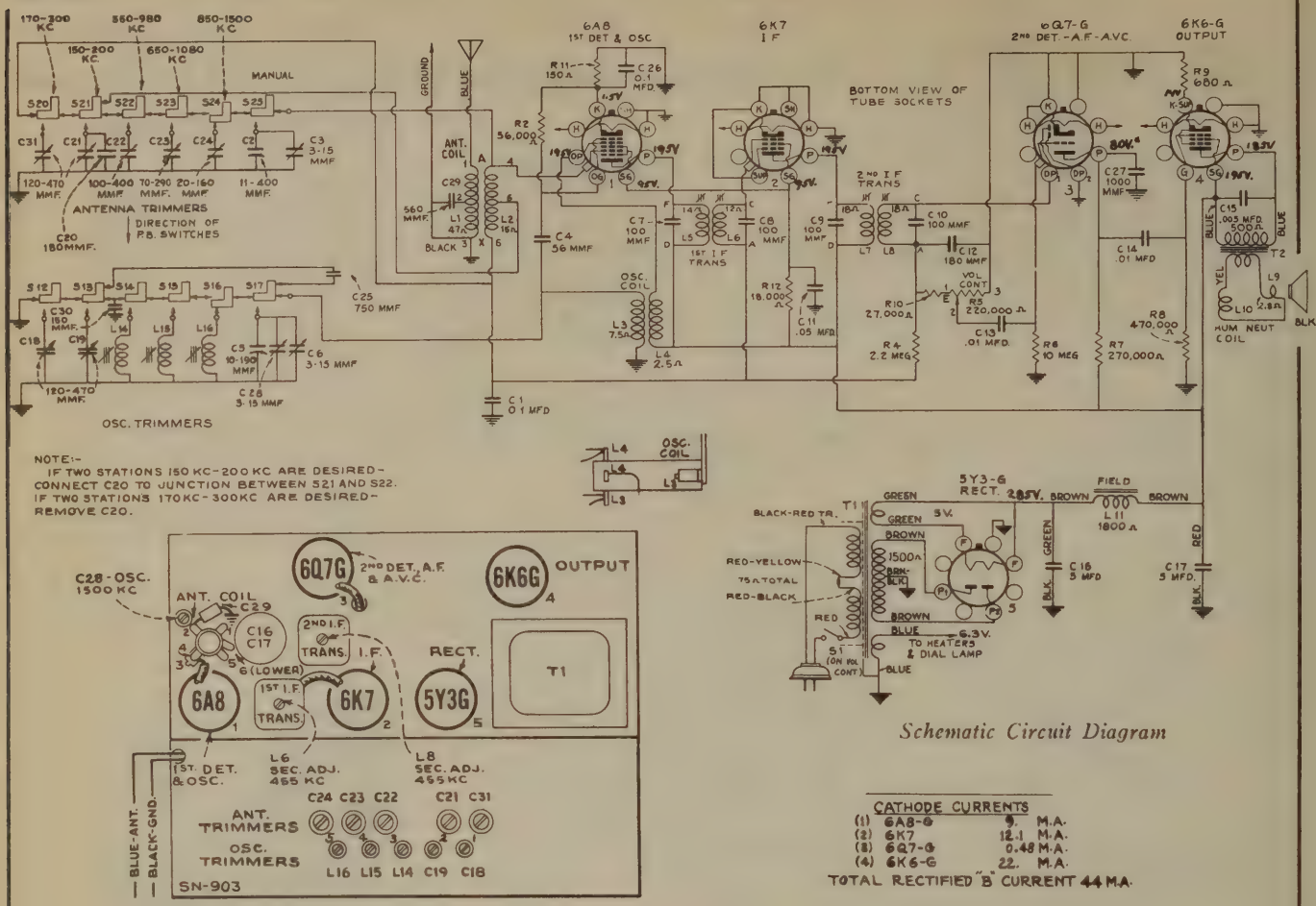
The procedure is as follows:

1. Make a list of the desired stations, arranged in the order of the push button ranges shown on the schematic diagram.
2. To adjust buttons Nos. 1 and 2, best results are obtained by using a test-oscillator. Using a separate receiver, tune in the desired station for button No. 1 and zero-beat the test-oscillator against the carrier of this station. Then, keeping the same setting on the test-oscillator, connect its output to the antenna of the 95T5LW. Adjust the antenna and oscillator trimmers of button No. 1 for maximum output. Proceed in a similar fashion for button No. 2.
3. To adjust buttons Nos. 3, 4 and 5, proceed as follows:
   a. Push in the dial-tuning (right-hand) button, and manually tune in the third station on the list.
   b. Push in station-button No. 3 and adjust No. 3 oscillator core (L14) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
   c. Adjust No. 3 antenna trimmer (C22) for maximum output on this station.
   d. Adjust for each of the remaining stations in a similar manner.

      **(Clockwise adjustment of oscillator and antenna trimmers tunes the circuits to lower frequencies.)**

   e. Make a final careful adjustment of the oscillator and antenna trimmers, using one or two feet of wire as an antenna to insure sharp peaking.

95T5LW




*Schematic Circuit Diagram*

CATHODE CURRENTS

| | | |
|---|---|---|
| (1) | 6A8-G | 9. M.A. |
| (2) | 6K7 | 12.1 M.A. |
| (3) | 6Q7-G | 0.48 M.A. |
| (4) | 6K6-G | 22. M.A. |

TOTAL RECTIFIED "B" CURRENT 44 M.A.

# REPLACEMENT PARTS

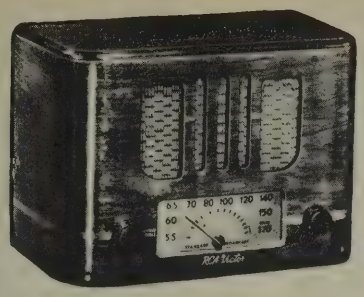
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-348-F)** |
| 32216 | Capacitor—Antenna trimmer capacitor bank (C31, C21, C22, C23, C24) |
| 32217 | Capacitor—Trimmer capacitor bank (C18, C19) |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30904 | Capacitor—100 mmfd. (C7, C8, C9, C10) |
| 12725 | Capacitor—150 mmfd. (C30) |
| 13003 | Capacitor—180 mmfd. (C12, C20) |
| 12537 | Capacitor—560 mmfd. (C29) |
| 31435 | Capacitor—750 mmfd. (C25) |
| 12635 | Capacitor—1,000 mmfd. (C27) |
| 4838 | Capacitor—.005 mfd. (C15) |
| 14393 | Capacitor—.01 mfd. (C13, C14) |
| 4886 | Capacitor—.05 mfd. (C11) |
| 30899 | Capacitor—0.1 mfd. (C1, C26) |
| 31423 | Capacitor—Comprising 2 sections 5 mfd. each (C16, C17) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 32218 | Coil—Antenna coil (L1, L2) |
| 31098 | Coil—Oscillator coil (L3, L4) |
| 31383 | Coil—Oscillator coil (L16) |
| 31384 | Coil—Oscillator coil (L15) |
| 31415 | Coil—Oscillator coil (L14) |
| 31097 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C28) |
| 30877 | Cord—Indicator drive cord |
| 30905 | Core—Adjustable core and stud for i-f transformers |
| 31386 | Core—Adjustable core and stud for oscillator coils |
| 31421 | Drum—Variable condenser drive cord drum |
| 32219 | Indicator—Station selector indicator pointer |
| 11891 | Lamp—Dial lamp |
| 31419 | Plate—Dial color plate |
| 31373 | Pulley—Indicator drive cord pulley |
| 13428 | Resistor—150 ohms, ½ watt (R11) |
| 31024 | Resistor—680 ohms, ½ watt (R9) |
| 30151 | Resistor—18,000 ohms, 1 watt (R12) |
| 12738 | Resistor—27,000 ohms, ½ watt (R10) |
| 12286 | Resistor—56,000 ohms, ½ watt (R2) |
| 12199 | Resistor—270,000 ohms, ½ watt (R7) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R6) |
| 14887 | Retainer—Pulley retainer |
| 14350 | Screw—No. 8-32 square head set screw for drum Stock No. 31421 |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Indicator drive cord tension spring |
| 32215 | Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25) |
| 31412 | Volume control and power switch (R5, S1) |
| 30902 | Transformer—First i-f transformer (L5, L6, C7, C8) |
| 30903 | Transformer—Second i-f transformer (L7, L8, C9, C10) |
| 31410 | Transformer—Power transformer, 100-120 and 200-240 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (Speaker 84326-2)** |
| 31473 | Cone—Speaker cone and voice coil (L9) |
| 31472 | Speaker—Complete |
| 31474 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31428 | Button—Station selector switch push button |
| 32220 | Dial—Station selector dial scale |
| 31095 | Discs—10 celluloid protector discs for call letter markers |
| 30863 | Knob—Volume control and power switch, or tuning condenser knob |
| 30991 | Marker—Station call letter markers |
| 30900 | Spring—Retaining spring for knob Stock No. 30863 |

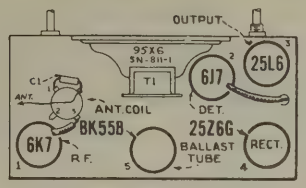
# MODELS 95X 95XL and 95X6

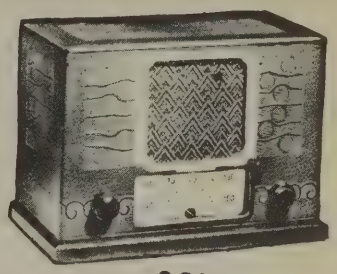
## Chassis No. RC345D RC345E RC-381A

## Five-Tube, Single-Band, AC-DC, T-R-F Receivers



95X & 95X6



95XL

## Electrical and Mechanical Specifications

Frequency Range..... 540-1,760 kc
Alignment Frequency..... 1,760 kc (ant., det.)

RADIOTRON COMPLEMENT

(1) RCA-6K7..... R-F Amp.
(2) RCA-6J7..... Detector
(3) RCA-25L6..... Output
(4) RCA-25Z6-G..... Rectifier
(5) RCA-BK55B..... Ballast Tube
Dial Lamp..... Mazda No. 40, 6.3 volts, .15 amps.

POWER SUPPLY RATINGS

A-C Rating..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating..... 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted..... 1.0 watt
Maximum..... 1.5 watts

LOUDSPEAKER

Type..... 5-inch Electrodynamic
Voice-Coil Impedance..... 3 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (95X)..... | 7½ in. .. | 10⅛ in. .. | 5-9/16 in. |
| Cabinet Dimensions (95XL)..... | 7½ in. .. | 10⅛ in. .. | 5-7/16 in. |
| Chassis Base..... | 2⅛ in. .. | 9 in. .. | 4⅜ in. |
| Over-all Chassis Height..... | | | 6¼ inches |

Weight..... 5¾ lbs. (Net), 7½ lbs. (Shipping)
Operating Controls..... (1) Power Switch—Volume; (2) Tuning

## Alignment Procedure

Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 mfd. capacitor. Turn gang condenser to minimum (full out), tune oscillator to 1,760 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during alignment.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

## 25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C13.

Antenna.—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmfd. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

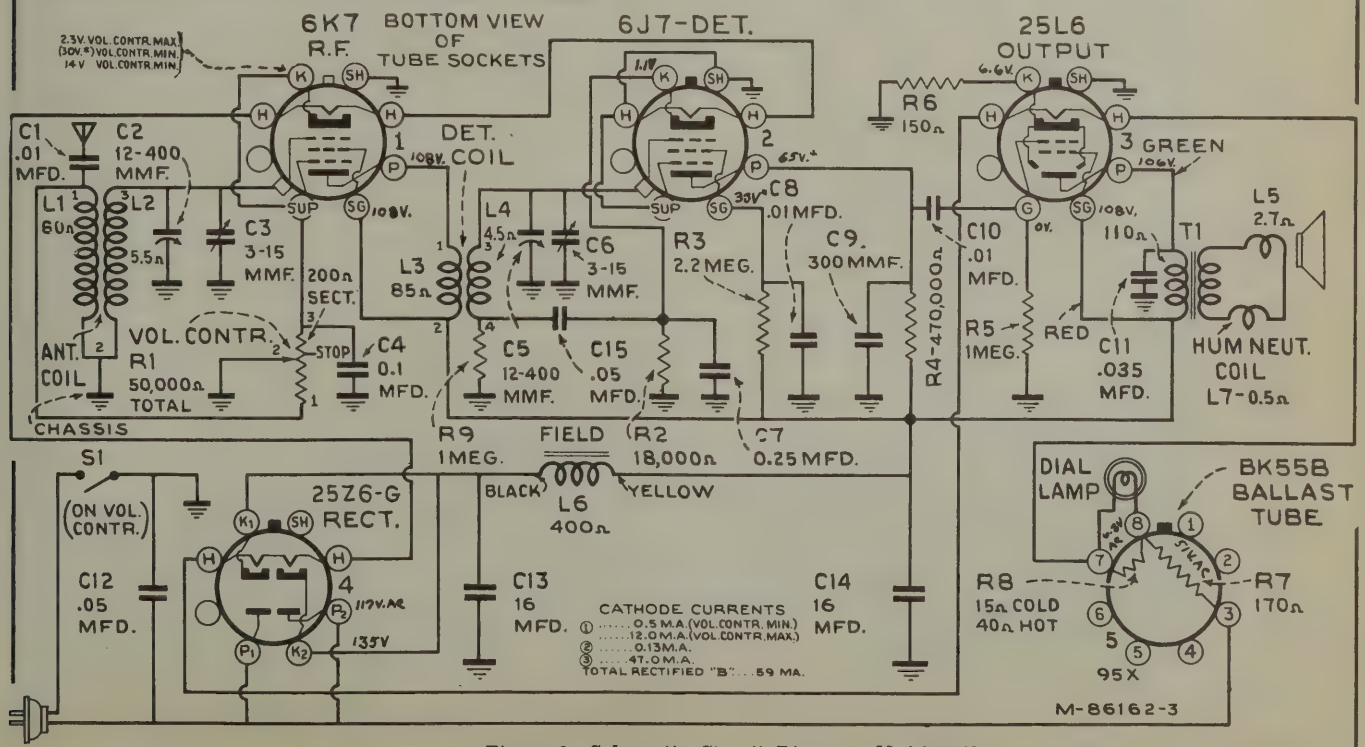
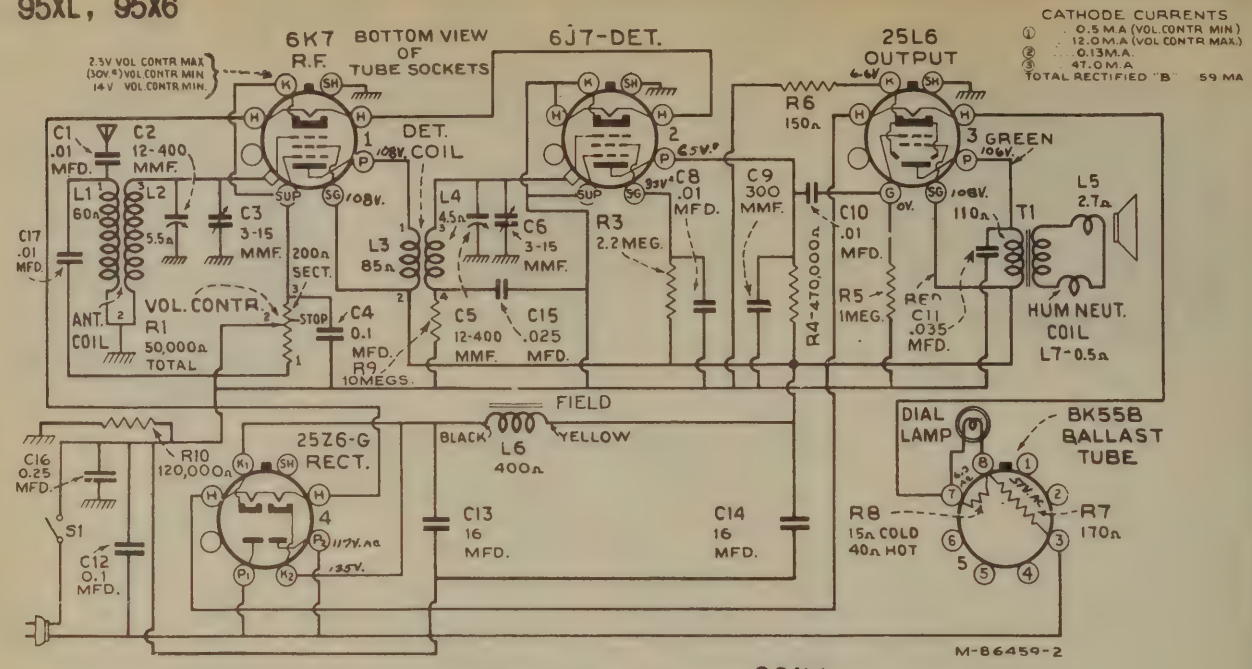



*Figure 2—Schematic Circuit Diagram* **Model 95X Model 95XL**

The line by-pass, C12, is changed to .25 mfd. (Stock No. 12484) in some sets.

# 95X, 95XL, 95X6




*Schematic Circuit Diagram* **95X6**

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODELS 95X 95XL** |
| | RECEIVER ASSEMBLIES |
| 31198 | Ballast—Ballast resistor tube type BK55B (R7, R8) |
| 30883 | Capacitor—300 mmf. (C9) |
| 14393 | Capacitor—.01 mfd. (C1, C8, C10) |
| 5196 | Capacitor—.035 mfd. (C11) |
| 30882 | Capacitor—.05 mfd. (C15) |
| 30899 | Capacitor—0.1 mfd. (C4) |
| 30965 | Capacitor—0.25 mfd. (C7) |
| 12484 | Capacitor—0.25 mfd. (C12) |
| 30873 | Capacitor—Comprising two 16 mfd. sections (C13, C14) |
| 30875 | Coil—Antenna coil (L1, L2) |
| 30876 | Coil—Det. coil (L3, L4) |
| 31195 | Condenser—2-gang variable tuning condenser—Model 95X only (C2, C3, C5, C6) |
| 31191 | Condenser—2-gang variable tuning condenser—Model 95XL only (C2, C3, C5, C6) |
| 30877 | Cord—Indicator drive cord |
| 31200 | Dial—Station selector dial scale and plate assembly |
| 31196 | Indicator—Station selector indicator pointer |
| 4340 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead—approximately 25 ft. long |
| 31198 | Resistor—Ballast resistor tube type BK55B (R7, R8) |
| 30880 | Resistor—150 ohms, ½ watt (R6) |
| 13045 | Resistor—18,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) |
| 13730 | Resistor—1 meg., ½ watt (R5, R9) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 31197 | Shaft—Indicator pointer shaft and pulley |
| 31199 | Shield—Dial lamp shield |
| 14171 | Socket—Dial lamp socket |
| 11196 | Socket—Radiotron and ballast resistor socket |
| 30631 | Spring—Indicator drive cord tension spring |
| 31198 | Tube—Ballast resistor tube type BK55B (R7, R8) |
| 31194 | Volume control and power switch—Model 95X only (R1, S1) |
| 31192 | Volume control and power switch—Model 95XL only (R1, S1) |
| | SPEAKER ASSEMBLIES (84202-3) |
| 31202 | Cone—Speaker cone and voice coil (L5) |
| 31201 | Speaker—Complete |
| 31203 | Transformer—Output transformer (T1) |
| | MISCELLANEOUS ASSEMBLIES |
| 31205 | Crystal—Station selector dial crystal |
| 30885 | Knob—Tuning or volume control knob—Model 95X only |
| 31204 | Knob—Tuning or volume control knob—Model 95XL only |
| 12993 | Screw—Set screw for knob Stock No. 30885—Model 95X only |
| 31079 | Screw—Chassis mounting screws and washers |
| 30900 | Spring—Retaining spring for knob Stock No. 31204—Model 95XL only |
| | **MODEL 95X6** |
| | RECEIVER ASSEMBLIES |
| 31198 | Ballast—Ballast resistor tube type BK55B (R7, R8) |
| 30883 | Capacitor—300 mmf. (C9) |
| 14393 | Capacitor—.01 mfd. (C1, C8, C10) |
| 4858 | Capacitor—.01 mfd. (C17) |
| 30938 | Capacitor—.025 mfd. (C15) |
| 5196 | Capacitor—.035 mfd. (C11) |
| 30899 | Capacitor—0.1 mfd. (C4) |
| 4839 | Capacitor—0.1 mfd. (C12) |
| 12484 | Capacitor—0.25 mfd. (C16) |
| 31323 | Capacitor—16 mfd (C13, C14) |
| 30875 | Coil—Antenna coil (L1, L2) |
| 30876 | Coil—Det. coil (L3, L4) |
| 31195 | Condenser—2-gang variable tuning condenser—(C2, C3, C5, C6) |
| 30877 | Cord—Indicator drive cord |
| 31200 | Dial—Station selector dial scale and plate assembly |
| 31196 | Indicator—Station selector indicator pointer |
| 4340 | Lamp—Dial lamp |
| 31193 | Lead—Antenna lead—approximately 25 ft. long |
| 31198 | Resistor—Ballast resistor tube type BK55B (R7, R8) |
| 30880 | Resistor—150 ohms, ½ watt (R6) |
| 13734 | Resistor—120,000 ohms, ½ watt (R10) |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) |
| 13730 | Resistor—1 meg., ½ watt (R5) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 13601 | Resistor—10 meg., ½ watt (R9) |
| 31197 | Shaft—Indicator pointer shaft and pulley |
| 31199 | Shield—Dial lamp shield |
| 14171 | Socket—Dial lamp socket |
| 31251 | Socket—Tube and ballast resistor socket |
| 30631 | Spring—Indicator drive cord tension spring |
| 31198 | Tube—Ballast resistor tube type BK55B (R7, R8) |
| 31966 | Volume control and power switch (R1, S1) |
| | SPEAKER ASSEMBLIES (84202-4) |
| 31202 | Cone—Speake cone and voice coil (L5) |
| 31201 | Speaker—Complete |
| 31203 | Transformer—Output transformer (T1) |
| | MISCELLANEOUS ASSEMBLIES |
| 31205 | Crystal—Station selector dial crystal |
| 30863 | Knob—Tuning or volume control knob |
| 31079 | Screw—Chassis mounting screws and washers |
| 30900 | Spring—Retaining spring for knob |

# Models 95X1 and 95X11

Chassis No. RC345C RC-381

## Five-Tube, Electric-Tuning, Single-Band, AC-DC, T-R-F Receiver

### Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,560 kc
Alignment Frequency ..... 1,560 kc (ant., det.)
One station between approximately 540-860 kc
Two stations between approximately 680-1,200 kc
Two stations between approximately 850-1,500 kc

RADIOTRON COMPLEMENT
(1) RCA-6K7 ..... R-F Amplifier
(2) RCA-6J7 ..... Detector
(3) RCA-25L6 ..... Output
(4) RCA-25Z6-G ..... Rectifier
(5) RCA-BK-55-B ..... Ballast Tube
Dial Lamp ..... Mazda 40, 6.3 volts, .15 ampere

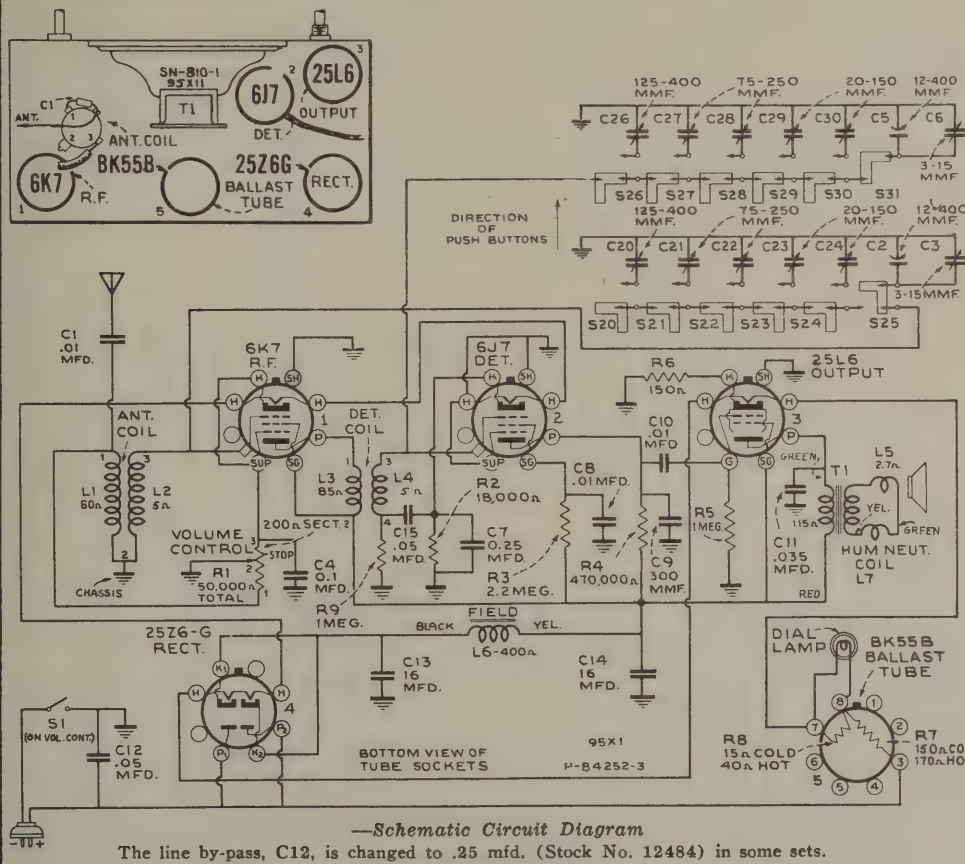
POWER SUPPLY RATINGS
A-C Rating ..... 105-125 volts, 50-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, 50 watts

POWER OUTPUT (125-volt, 60-cycle supply)
Undistorted ..... 1.0 watt
Maximum ..... 1.5 watts

LOUDSPEAKER
Type ..... 5-inch Electrodynamic
Voice-Coil Impedance ..... 3 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (95X1) | 7⅛ inches | 10⅛ inches | 5-9/16 inches |
| Chassis Base | 2⅛ inches | 9 inches | 4⅜ inches |
| Over-all Chassis Height | | | 6¼ inches |

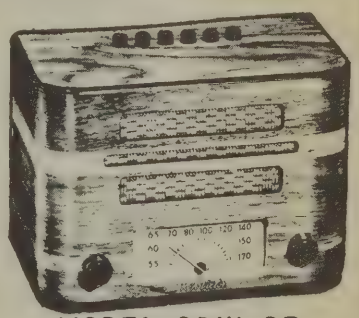
Weight ..... 5¾ lbs. (Net), 7½ lbs. (Shipping)
Operating Controls ..... (1) Power Switch—Volume, (2) Tuning, (3) Five Station Buttons, One Manual Tuning Button




*—Schematic Circuit Diagram*

The line by-pass, C12, is changed to .25 mfd. (Stock No. 12484) in some sets.

MODEL 95X1



MODEL 95X1 OR 95X11

### Alignment Procedure

Remove chassis from cabinet.

Reel up the antenna wire, and connect the high side of test-oscillator through an 80-mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through an .01-mfd. capacitor. Turn gang condenser to minimum (full out), push in the manual-tuning (right-hand) button, tune oscillator to 1,560 kc, connect an output meter across the voice coil, and turn volume control to maximum.

Keep antenna roll and lead clear of chassis during all adjustments.

Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

Turn pointer, so that it is horizontal and pointing to low-frequency end when the gang condenser is at maximum. Check pointer adjustment on a station.

### Adjustment of Tuning Capacitors

The preferable and quickest method of adjusting the tuning capacitors for five different stations, is to employ a test-oscillator, as described below:

1. Make a list of the desired five stations, arranged in order from low to high frequencies.

2. Determine the correct settings of the test-oscillator for these five frequencies. This is accomplished as follows: Tune in each of the five stations on any standard receiver; zero-beat the test-oscillator against each station, and note the exact setting of the oscillator in each case.

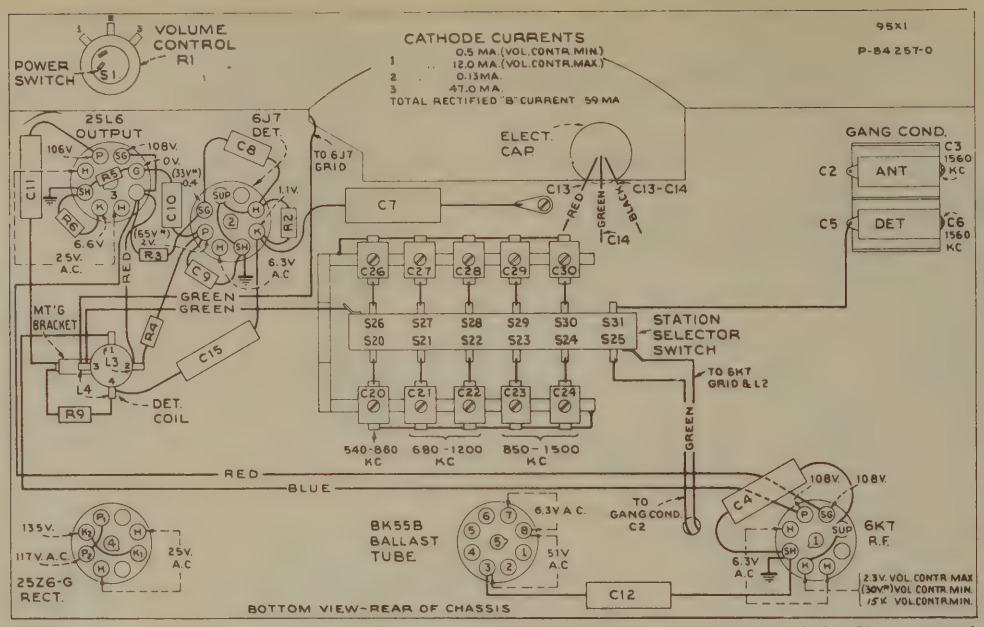
3. Reel up the antenna wire. Connect the high side of test-oscillator through an 80-mmfd. fixed capacitor to the end of the antenna wire. Clip the low side of the oscillator through a 0.1-mfd. capacitor to one of the chassis-mounting screws on the bottom of the cabinet. Tune the oscillator to the previously-determined point for the lowest-frequency station, and adjust for a strong output.

4. Turn the volume control of the push-button receiver full clockwise, and push in the left-hand end button. Using an insulated screwdriver, peak capacitors C20 and C26, at the same time reducing the output of the oscillator in order to secure a sharp peak. (Clockwise adjustment of the capacitors tunes the circuits to lower frequencies, and counter-clockwise adjustment tunes the circuits to higher frequencies. The range of each trimmer is three full counter-clockwise turns from the tight position. Do not unscrew more than three turns.)

5. Push in the second button from left, and adjust C21 and C27 for peak output with the oscillator tuned to the frequency of the second station.

6. Proceed in this manner to adjust each pair of capacitors for the desired frequencies.

7. Final adjustment may be made in actual reception of the stations.




*—Radiotron Socket Voltages, and Location of Parts* **MODEL 95x1**

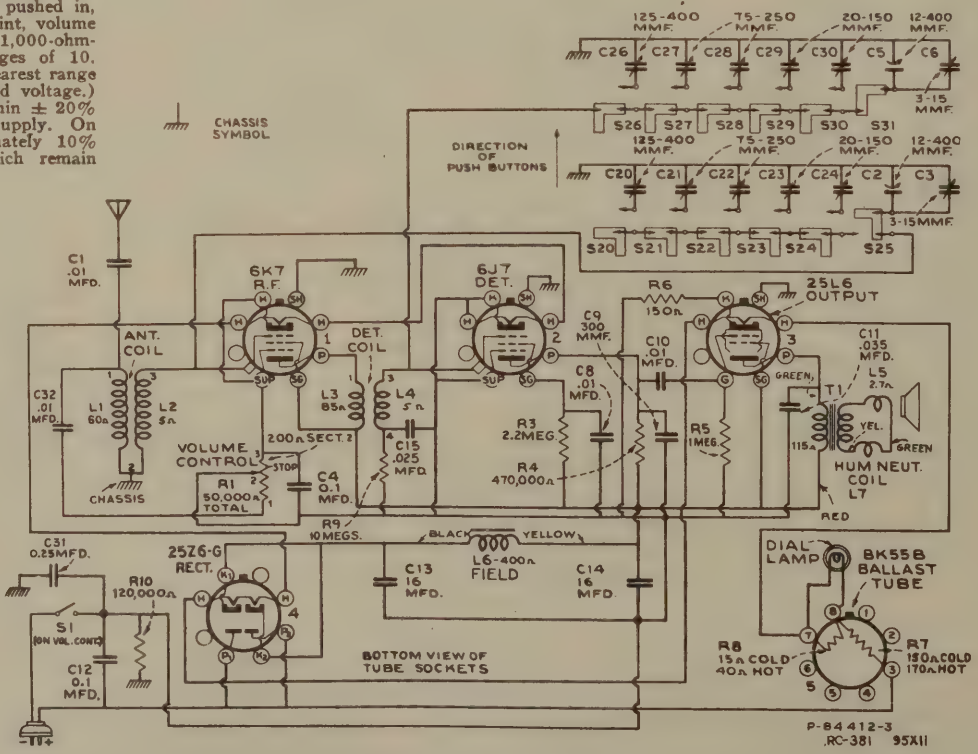
*Note: Values with star (*) are operating voltages.
Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with manual-tuning button (right-hand) pushed in, and set tuned to a quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

## VOLTAGES MEASURED TO COMMON NEGATIVE ON MODEL 95 x 11




*Schematic Circuit Diagram*

**MODEL 95x11**

### Precautionary Lead Dress

1. Dress Power cord away from detector coil, heater leads close to base, leads from electrolytic close to base and free of grid leads.
2. Dress blue lead from r-f plate to detector coil along front edge of push-button shaft holes. Dress all leads to prevent rubbing against push button shafts.

### 25-Cycle Operation

For 25-cycle operation, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) from the cathode of the rectifier tube to chassis. (Positive to contact K1 of 25Z6-G, and negative to shell contact of 6K7 r-f socket.)

# MODEL 95x1

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **RECEIVER ASSEMBLIES** | | 12285 | Resistor—470,000 ohms, ½ watt (R4) | |
| 31198 | Ballast—Ballast resistor-tube type BK55B (R7, R8) | | 13730 | Resistor—1 meg., ½ watt (R5, R9) | |
| 31208 | Capacitor—Antenna tuning capacitor bank (C20, C21, C22, C23, C24) | | 12679 | Resistor—2.2 meg., ½ watt (R3) | |
| 31209 | Capacitor—Detector tuning capacitor bank (C26, C27, C28, C29, C30) | | 31197 | Shaft—Indicator pointer shaft and pulley | |
| 30883 | Capacitor—300 mmf. (C9) | | 31199 | Shield—Dial lamp shield | |
| 14393 | Capacitor—.01 mfd. (C1, C8, C10) | | 14171 | Socket—Dial lamp socket | |
| 5196 | Capacitor—.035 mfd. (C11) | | 11196 | Socket—Radiotron and ballast resistor socket | |
| 30882 | Capacitor—.05 mfd. (C15) | | 30631 | Spring—Indicator drive cord tension spring | |
| 30899 | Capacitor—0.1 mfd. (C4) | | 31207 | Switch—Station selector switch (S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31) | |
| 30965 | Capacitor—0.25 mfd. (C7) | | 31198 | Tube—Ballast resistor tube type BK55B (R7, R8) | |
| 12484 | Capacitor—0.25 mfd. (C12) | | 31194 | Volume control and power switch (R1, S1) | |
| 30873 | Capacitor—Comprising two 16 mfd. sections (C13, C14) | | | **SPEAKER ASSEMBLIES** (Speaker 84202-3) | |
| 60875 | Coil—Antenna coil (L1, L2) | | 31202 | Cone—Speaker cone and voice coil (L5) | |
| 30876 | Coil—Det. coil (L3, L4) | | 31201 | Speaker—Complete | |
| 31195 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6) | | 31203 | Transformer—Output transformer (T1) | |
| 30877 | Cord—Indicator drive cord | | | **MISCELLANEOUS ASSEMBLIES** | |
| 31206 | Dial—Station selector dial and dial plate assembly | | 31210 | Button—Station selector push button | |
| 31196 | Indicator—Station selector indicator pointer | | 31205 | Crystal—Station selector dial crystal | |
| 4340 | Lamp—Dial lamp | | 31095 | Disc—10 celluloid protector discs for call letter markers | |
| 31193 | Lead—Antenna lead—approximately 25 ft. long. | | 30885 | Knob—Tuning or volume control knob | |
| 31198 | Resistor—Ballast resistor tube type BK55B (R7, R8) | | 30991 | Markers—Station selector button call letter markers | |
| 30880 | Resistor—150 ohms, ½ watt (R6) | | 12993 | Screw—Set screw for knob Stock No. 30885 | |
| 13045 | Resistor—18,000 ohms, ½ watt (R2) | | 31079 | Screw—Chassis mounting screws and washers | |

# MODEL 95x11

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **RECEIVER ASSEMBLIES** | | 13730 | Resistor—1 meg., ½ watt (R5) | |
| 31198 | Ballast—Ballast resistor-tube type BK55B (R7, R8) | | 12679 | Resistor—2.2 meg., ½ watt (R3) | |
| 31208 | Capacitor—Antenna tuning capacitor bank (C20, C21, C22, C23, C24) | | 13601 | Resistor—10 meg., ½ watt (R9) | |
| 31209 | Capacitor—Detector tuning capacitor bank (C26, C27, C28, C29, C30) | | 31197 | Shaft—Indicator pointer shaft and pulley | |
| 30883 | Capacitor—300 mmf. (C9) | | 31199 | Shield—Dial lamp shield | |
| 14393 | Capacitor—.01 mfd. (C1, C8, C10) | | 14171 | Socket—Dial lamp socket | |
| 4858 | Capacitor—.01 mfd. (C32) | | 31251 | Socket—Tube and ballast resistor socket | |
| 30938 | Capacitor—.025 mfd. (C15) | | 30631 | Spring—Indicator drive cord tension spring | |
| 5196 | Capacitor—.035 mfd. (C11) | | 31207 | Switch—Station selector switch (S20, S21, S22, S23, S24, S25, S26, S27, S28, S29, S30, S31) | |
| 30899 | Capacitor—0.1 mfd. (C4) | | 31198 | Tube—Ballast resistor tube type BK55B (R7, R8) | |
| 4839 | Capacitor—0.1 mfd. (C12) | | 31966 | Volume control and power switch (R1, S1) | |
| 12484 | Capacitor—0.25 mfd. (C31) | | | **SPEAKER ASSEMBLIES** (Speaker 84202-4) | |
| 31323 | Capacitor—16 mfd. (C13, C14) | | 31202 | Cone—Speaker cone and voice coil (L5) | |
| 30875 | Coil—Antenna coil (L1, L2) | | 31201 | Speaker—Complete | |
| 30876 | Coil—Det. coil (L3, L4) | | 31203 | Transformer—Output transformer (T1) | |
| 31195 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6) | | | **MISCELLANEOUS ASSEMBLIES** | |
| 32634 | Cord—Indicator drive cord | | 31210 | Button—Station selector push button | |
| 31206 | Dial—Station selector dial and dial plate assembly | | 31205 | Crystal—Station selector dial crystal | |
| 31196 | Indicator—Station selector indicator pointer | | 31095 | Disc—10 celluloid protector discs for call letter markers | |
| 4340 | Lamp—Dial lamp | | 30863 | Knob—Tuning or volume control knob | |
| 31193 | Lead—Antenna lead—approximately 25 ft. long. | | 30991 | Markers—Station selector button call letter markers | |
| 31198 | Resistor—Ballast resistor tube type BK55B (R7, R8) | | 31079 | Screw—Chassis mounting screws and washers | |
| 30880 | Resistor—150 ohms, ½ watt (R6) | | 30900 | Spring—Retaining spring for knob | |
| 13734 | Resistor—120,000 ohms, ½ watt (R10) | | | | |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) | | | | |

# MODEL 95XLW

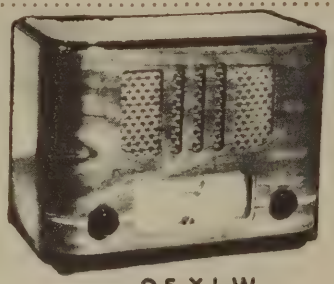
## Chassis No. RC-345F

## Five-Tube, Two-Band, AC-DC, T-R-F Receiver

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Long Wave (X) ..... 150-360 kc
Standard Broadcast (A) ..... 530-1,500 kc



95XLW

TUBE COMPLEMENT

(1) RCA-6K7 ..... R-F Amp.
(2) RCA-6J7 ..... Detector
(3) RCA-25L6 ..... Output
(4) RCA-25Z6-G ..... Rectifier
(5) RCA-BK55B ..... Ballast Tube

Dial Lamp. Mazda No. 40, 6.3 volts, .15 amps.

LOUDSPEAKER

Type ..... 5-inch electrodynamic
Voice-Coil Impedance ... 3 ohms at 400 cycles

POWER OUTPUT

(125 volt, 60 cycle supply)

Undistorted ..... 1.0 watt
Maximum ..... 1.5 watts

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 25-60 cycles, 50 watts
D-C Rating ..... 105-125 volts, 50 watts

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions | 7½ in. | 10⅛ in. | 5⅝ in. |
| Chassis Base | 2¾ in. | 9 in. | 4⅞ in. |
| Over-all Chassis Height | | | 6¼ in. |
| Weight | 5¾ lbs. (Net), 7⅓ lbs. (Shipping) | | |

### Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (84202-3)** |
| 31202 | Cone—Speaker cone (L5) |
| 31201 | Speaker—Speaker complete |
| 31203 | Transformer—Output transformer (T1) |
| | **CHASSIS ASSEMBLIES (RC-345F)** |
| 31198 | Ballast—Ballast resistor tube (R7, R8) |
| 4287 | Body—Connector body for dial lamp connector |
| 13002 | Capacitor—12 mmfd. (C16, C18) |
| 13003 | Capacitor—180 mmfd. (C17) |
| 30883 | Capacitor—300 mmfd. (C9) |
| 14393 | Capacitor—.01 mfd., 300 V. (C1, C8, C10) |
| 5196 | Capacitor—.035 mfd. (C11) |
| 30899 | Capacitor—.01 mfd., 200 V. (C4) |
| 30882 | Capacitor—.05 mfd. 200 V. (C15) |
| 12484 | Capacitor—.25 mfd., 400 V. (C12) |
| 30965 | Capacitor—0.25 mfd., 350 V. (C7) |
| 31323 | Capacitor—16 mfd., 150 V. (C14) |
| 31584 | Capacitor—40 mfd., 150 V. (C13) |
| 32213 | Coil—Antenna coil (L1, L2, C19) |
| 32214 | Coil—R.F. coil (L3, L4) |
| 31195 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6) |
| 14086 | Cord—Power cord |
| 32634 | Cord—Variable condenser drive cord |
| 32211 | Dial—Station selector dial scale and plate assembly |
| 4286 | Ferrule—Ferrule for dial lamp connector |
| 4340 | Lamp—Pilot lamp |
| 31193 | Lead—Antenna lead |
| 31196 | Pointer—Station selector indicator pointer |
| 31198 | Resistor—Ballast resistor tube (R7, R8) |
| 30880 | Resistor—150 ohms, ½ watt (R6) |
| 13045 | Resistor—18,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) |
| 13730 | Resistor—1 megohm, ½ watt (R5, R9) |
| 12679 | Resistor—2.2 megohms, ½ watt (R3) |
| 31197 | Shaft—Indicator pointer shaft and pulley |
| 31251 | Socket—8-contact tube socket |
| 14171 | Socket—Lamp socket assembly |
| 4284 | Spring—Spring for dial lamp connector |
| 32210 | Switch—Range switch (S2) |
| 31198 | Tube—Ballast resistor tube (R7, R8) |
| 31194 | Volume Control—Volume control and power switch (R1, S1) |
| 4285 | Washer—Insulating washer for dial lamp connector |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31205 | Crystal—Station selector dial crystal |
| 31204 | Knob—Range switch knob |
| 30885 | Knob—Station selector or volume control knob |
| 30870 | Plug—2 contact male plug for motor leads |
| 31079 | Screw—Chassis mounting screws and washers |
| 30900 | Spring—Retaining spring for knob Stock No. 31204 |

### Alignment Procedure

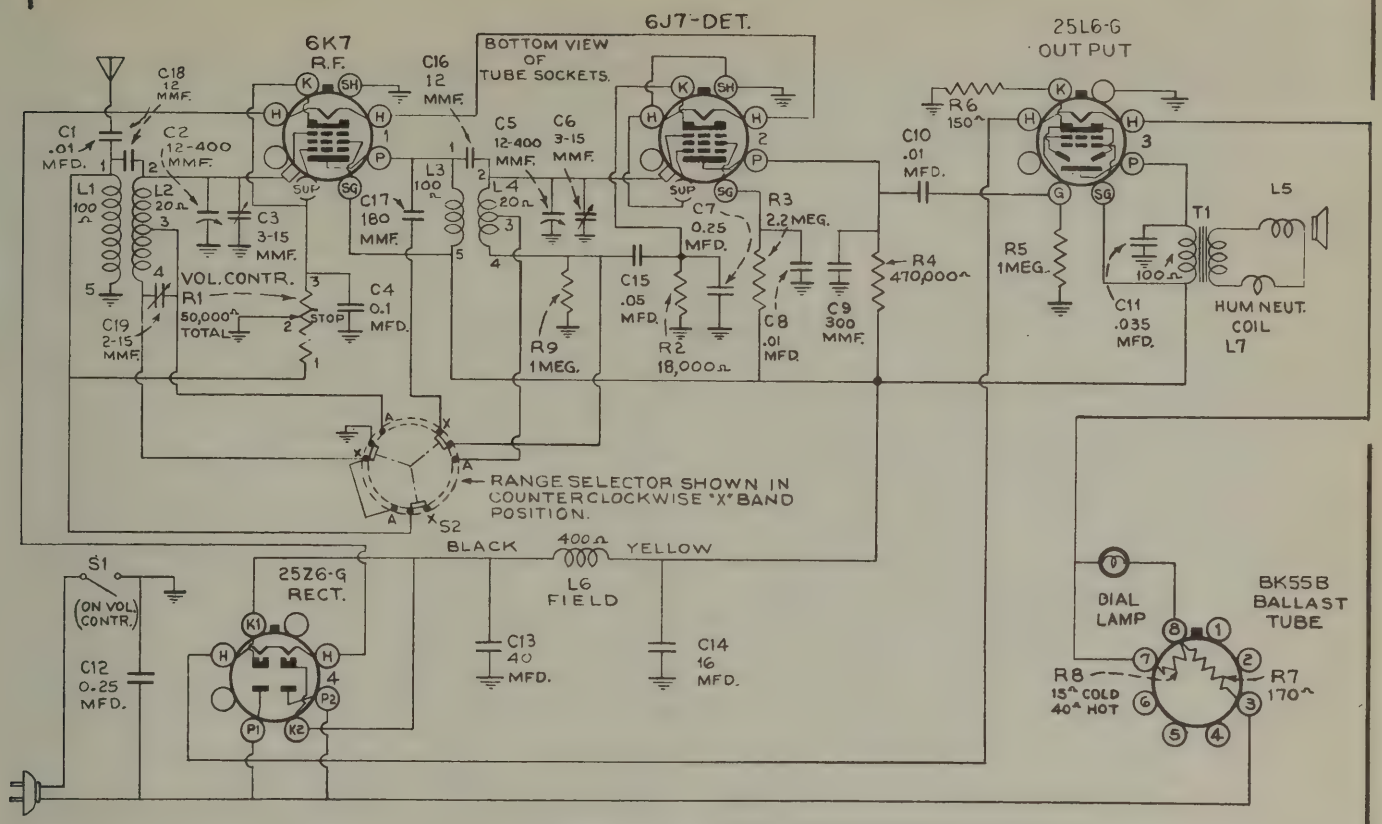
**CAUTION:** The chassis is connected to one side of the power line. Avoid contact of chassis or parts to external ground when servicing.

Turn pointer, while holding tuning knob, so that the pointer is horizontal and pointing to low frequency end when the gang condenser is at maximum.

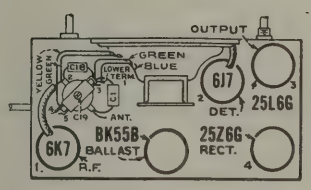
Reel up the antenna wire, and connect the high side of test-oscillator through an 80 mmfd. capacitor to the antenna terminal on the antenna transformer. Connect low side of oscillator to receiver chassis through a 0.1 capacitor. Keep antenna roll and lead clear of chassis during alignment.

To align "A" band, turn range switch to "A" band (clockwise) position, turn receiver dial to 1,500 kc, tune test-oscillator to 1,500 kc, connect an output meter across the voice coil, and turn volume control to maximum. Adjust the two trimmers (C3 and C6) on side of gang condenser for maximum output, using lowest possible output from test-oscillator.

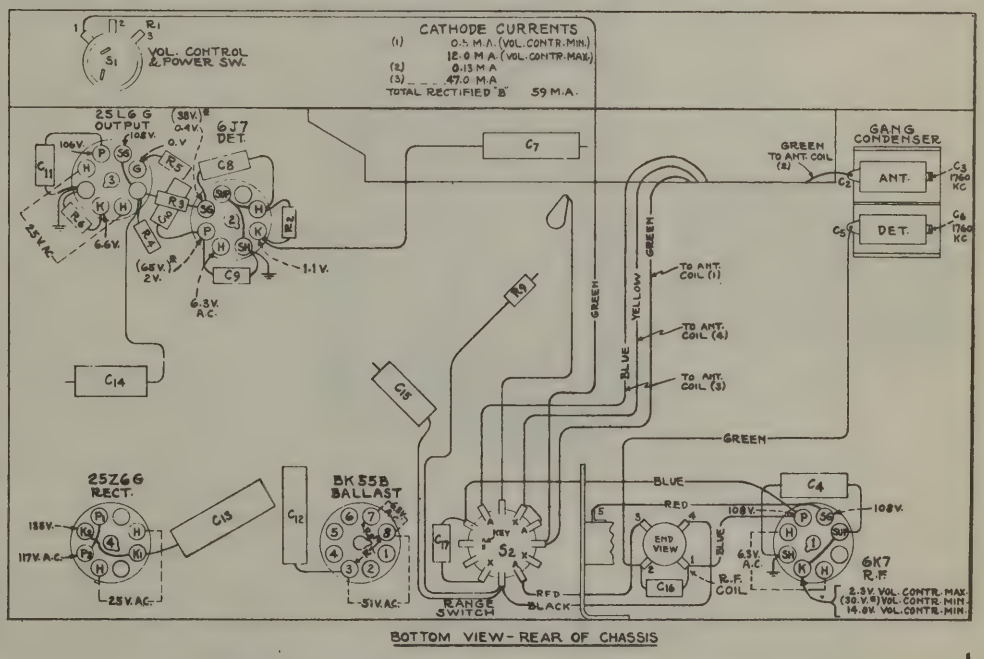
To align "X" band, turn range switch to "X" band (counter-clockwise) position, tune test-oscillator to 360 kc, and adjust C19 for maximum output. The gang should be rocked during "X" band alignment.




*Schematic Circuit Diagram*




*Tube and Trimmer Locations*




* Note: Values with (*) are operating voltages.

Values not starred are actual measured voltages.

Measurements made to chassis unless otherwise indicated.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter, having ranges of 10, 50, and 250 volts. (Use nearest range above the specified measured voltage.)

Values should hold within approximately ± 20% for 117-volt 60-cycle a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

## Precautionary Lead Dress

1. Dress power cord away from yellow lead to volume control.
2. Dress all leads away from antenna coil.
3. Green lead from gang to detector coil must be dressed under switch shaft and over detector coil (looking from bottom of chassis).
4. Yellow lead from volume control to 6K7 cathode must be dressed down against rear apron of chassis.
5. Green lead from switch to volume control must be dressed away from all other wires.
6. All leads to detector coil, except green lead in No. 3 (above) must be dressed down against the chassis base.

# MODELS 96BK6 and 96BT6

**Chassis No. RC-392 RC-392**

## Six-Tube, Electric-Tuning, Two-Band, Battery-Operated, Superheterodyne Receiver

## and MODEL CV-9 A-C Power Unit

### Electrical and Mechanical Specifications

**FREQUENCY RANGES**

| | |
|---|---|
| Standard Broadcast ("A" Band) | 540—1,720 kc |
| Short Wave ("C" Band) | 5.8—18 mc |
| Four Electric Tuning Positions | 550—1,500 kc |
| One station between approximately 550— 950 kc (Button No. 1) | |
| One station between approximately 610—1,090 kc (Button No. 2) | |
| One station between approximately 750—1,370 kc (Button No. 3) | |
| One station between approximately 845—1,500 kc (Button No. 4) | |
| Intermediate Frequency | 455 kc |

**RCA TUBE COMPLEMENT**

| | |
|---|---|
| (1) RCA-6D8-G | First Detector—Oscillator |
| (2) RCA-6S7-G | I-F Amplifier |
| (3) RCA-6T7-G | 2nd Detector, A.V.C., and 1st A.F. |
| (4) RCA-6W7-G | Audio Driver |
| (5) RCA-6L5-G | Power Output |
| (6) RCA-6L5-G | Power Output |
| Pilot Lamp (1) | Mazda No. 47, 6.3 volts, 0.15 amp. |

**POWER SUPPLY RATINGS**

With CV-9 a-c power supply unit:
100-130/140-160/195-250 volts, 25-60 cycles, 45 watts

With RS-79B d-c power supply unit:
6.3 volts; total current drain 1.85 amps.

**POWER OUTPUT**

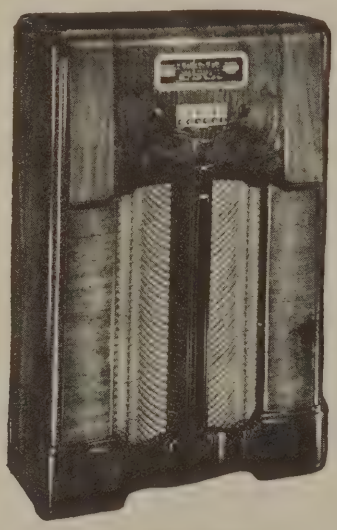
| | Undistorted | Maximum |
|---|---|---|
| With a-c power unit | 2.2 watts | 3.5 watts |
| With d-c power unit | 1.7 watts | 2.2 watts |

**LOUDSPEAKER**

| | |
|---|---|
| Type | Permanent Magnet Dynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |
| Diameter | 96BK6, 8 inches; 96BT6, 6 inches |

| | Model 96BT6 | Model 96BK6 |
|---|---|---|
| Height | 10⅜ inches | 39½ inches |
| Width | 20¼ inches | 26 inches |
| Depth | 9⅜ inches | 12⅜ inches |
| Net Weight | 17¼ pounds | 21 pounds |
| Shipping Weight | 46 pounds | 61 pounds |
| Chassis Base Dimensions | 3 inches x 11¼ inches x 5 inches | |
| Over-all Height of Chassis | 7⅜ inches | |
| Tuning Drive Ratio | 12 to 1 | |

*Model 96BT6*



*Model 96BK6*

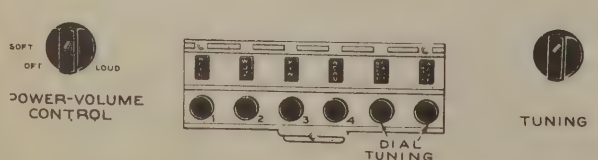
### Power Supply Units

The receiver chassis has a seven-prong male plug for connection to the power-supply unit. Both a-c and d-c power supply units are available, as listed under "Power Supply Ratings." The receivers are shipped with a d-c power unit for use with a 6-volt supply. If an a-c unit is desired, it must be purchased separately as Model CV-9.

If no receiver chassis is available the a-c unit (CV-9) may be tested for proper operation by connecting a 6,500-ohm, 10-watt resistor between terminals 2 and 4 on the cable socket, and shorting terminals 1 and 7. With one voltmeter prod on terminal 2 (ground) the following readings should be obtained: terminal 3, + 200 volts d.c.; terminal 4, + 200 volts d.c.; terminal 5, —5.9 volts d.c.; terminal 6, 6.5 volts a.c. Values should be within ± 20% with rated supply voltage.

**Precautionary Lead Dress.—**

1. Blue lead from push button switch to gang condenser must be dressed over the top of the switch.
2. Leads to push button coils must be dressed close to the coils.
3. Red and blue leads to gang condenser must be dressed away from chassis.
4. Blue antenna lead must be dressed in the end of the chassis away from gang leads and coil windings.
5. Bias cell must be installed with carbon disc connected to chassis.
6. Leads from power switch to connector plug must be dressed away from other leads.
7. Parts under push button coils must be dressed down away from them.
8. Green lead to first detector grid cap should be pulled out of the chassis as far as possible, and dressed away from the tube envelope.

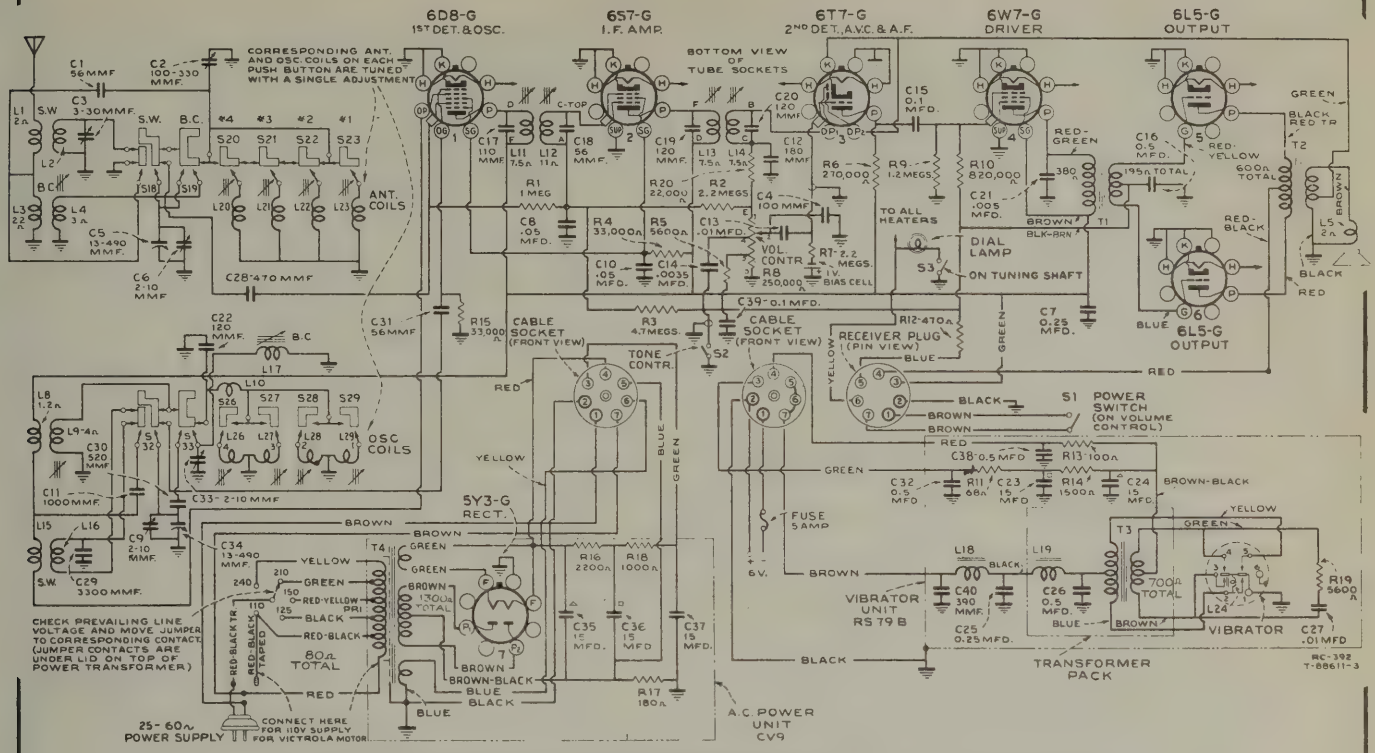



*Location of Controls*

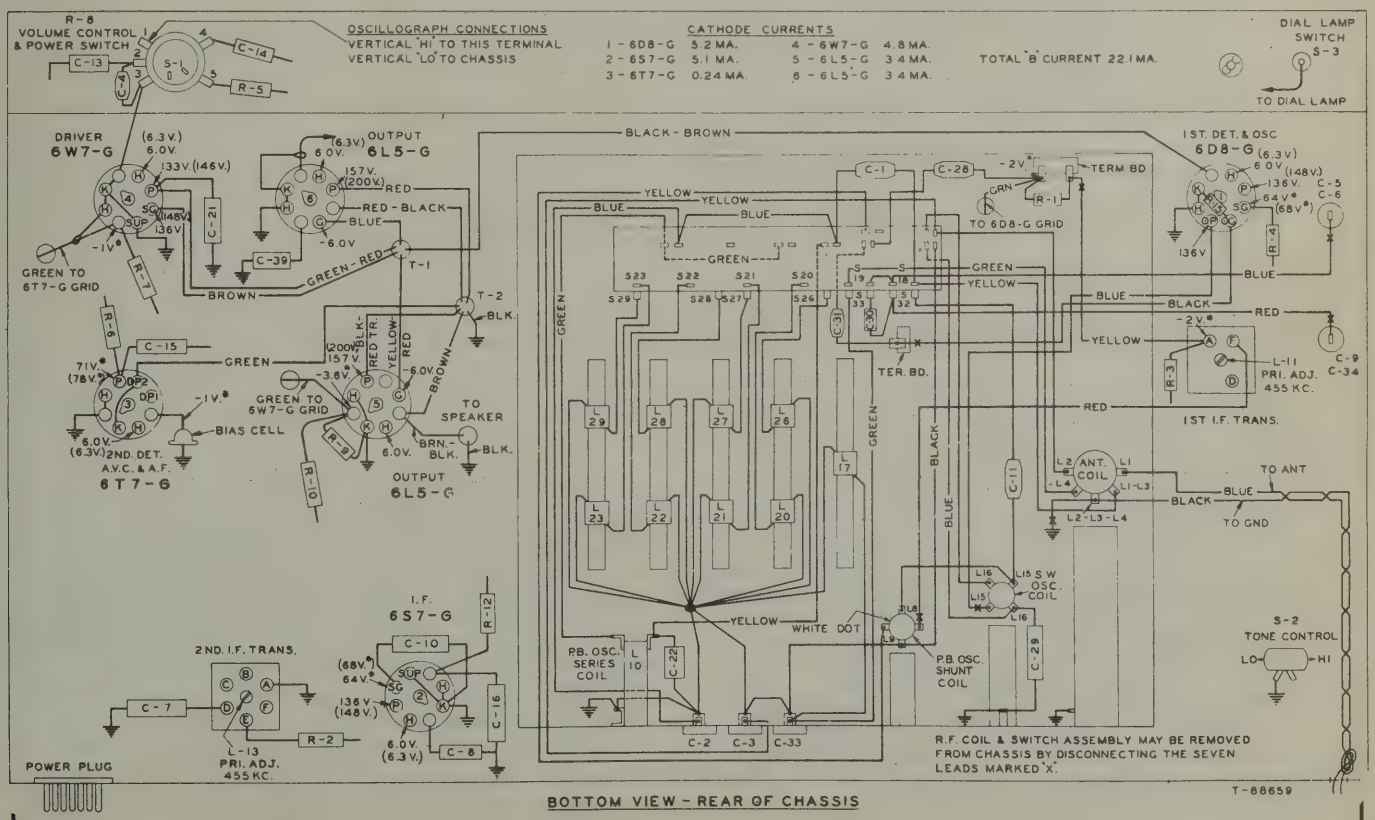
### Miscellaneous Service Data

To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

The push button switch and coil assembly may be removed from the chassis by removing two screws from the front apron, one from the rear apron, removing the 6D8-G grid connector from the grid cap, and disconnecting the seven leads indicated on the Wiring Diagram.




*Schematic Circuit Diagram for Models 96BK6, 96BT6 and CV-9 A-C Power Unit*




BOTTOM VIEW - REAR OF CHASSIS

*R-F Wiring Diagram and Socket Voltages*

**Measurements made to chassis unless otherwise indicated, with set tuned to a quiet point and the volume control at minimum. Values should hold within approximately ± 20% with rated supply voltage.**

*** Note:** Values with star (*) are operating voltages in circuits with high series resistance. The actual measured values will be lower, depending on the voltmeter loading.

Bracketed voltages ( ) refer to operation with CV-9 a-c power unit.

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown on the chassis drawing.

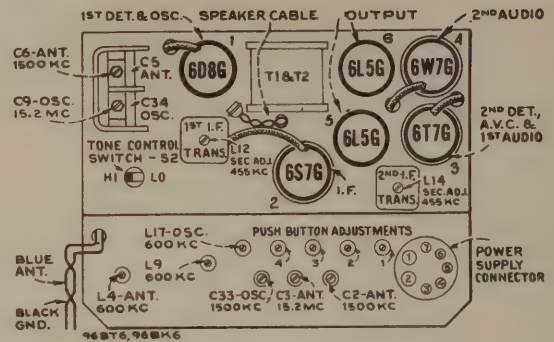
**Output Meter Alignment.**—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

**Test Oscillator.**—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the oscillator output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment."




*Tube and Trimmer Locations*

| Steps | Connect the High Side of Test Oscillator to: | Tune Test Oscillator To: | Press Push Button: | Turn Radio Dial to: | Adjust for Maximum Peak Output: |
|---|---|---|---|---|---|
| 1 | 6S7-G I-F grid cap in series with .01 mfd. | 455 kc | B.C. (No. 5) | No Station Point between 550—750 kc. | L13 and L14 (2nd I-F Trans.) |
| 2 | 6D8-G Det. grid cap in series with .01 mfd. | 455 kc | B.C. (No. 5) | | L11 and L12 (1st I-F Trans.) |
| 3 | Antenna Lead (blue) in series with 200 mmfd. | 1,500 kc | No. 4 | | L20-L26 (No. 4 Push Button Adj.) C2 (ant.) |
| 4 | Antenna Lead (blue) in series with 200 mmfd. | 600 kc | No. 1 | | L23-L29 * (No. 1 Push Button Adj.) L9 (osc.) |
| 5 | Repeat steps 3 and 4 until maximum signal is obtained. | | | | |
| 6 | Unscrew C9 (osc.) to minimum capacity. | | | | |
| 7 | Antenna Lead (blue) in series with 200 mmfd. | 600 kc | B.C. (No. 5) | 600 kc Calibration Mark | L17 (osc.) ** L4 (ant.) |
| 8 | Antenna Lead (blue) in series with 200 mmfd. | 1,500 kc | B.C. (No. 5) | 1,500 kc Calibration Mark | C33 (osc.) C6 (ant.) |
| 9 | Repeat steps 7 and 8 until maximum signal is obtained. | | | | |
| 10 | Antenna Lead (blue) in series with 300 ohms | 15.2 mc | S.W. (No. 6) | 15.2 mc Calibration Mark | C9 (osc.) † C3 (ant.) †† |
| 11 | Antenna Lead (blue) in series with 200 mmfd. | 1,500 kc | B.C. (No. 5) | 1,500 kc Calibration Mark | C33 (osc.) |
| 12 | Follow the "Adjustments for Electric Tuning." | | | | |

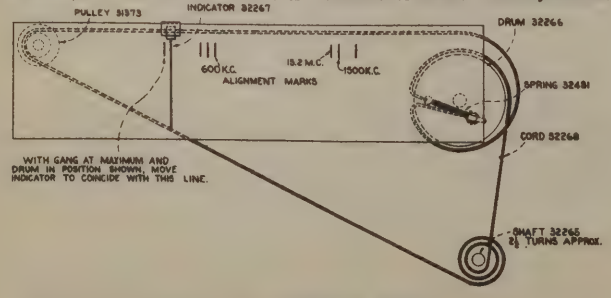
* Adjust L23-L29 (No. 1 push button adjustment) and L9 at the same time, rocking in for maximum signal.

** Turn L17 adjusting screw all the way out, then turn in slowly until a peak is reached. If two peaks can be obtained the lower inductance setting (screw out) should be used.

† Use minimum capacity peak if two peaks can be obtained. A weaker signal (image) should be received about one quarter inch to the left on the dial plate.

†† Use maximum capacity peak if two peaks can be obtained, rock in for maximum signal.

**Note:** The oscillator tracks 455 kc above the signal on all bands. After the receiver has been installed and the antenna connected, it is advisable to make a slight change in the adjustment of the antenna trimmer, C2. In most cases it is desirable to make this adjustment while receiving a station on No. 4 push button. However, if a station received on one of the other buttons is especially weak, it may be advisable to make the adjustment while receiving the weak station on that particular button.




*Dial Drive Hookup and Alignment Marks*

## Adjustment for Electric Tuning

These models have six push buttons. The right-hand button connects the receiver for dial tuning on the "Short-wave" band, the next button connects for dial tuning on the "Standard-broadcast" band, and the other four buttons are for electric tuning of four different stations in the standard-broadcast band. Each station button connects separate oscillator and antenna coils which are tuned by ganged magnetite cores, and may be adjusted for the desired stations. Use a small screw-driver or alignment tool such as RCA Stock No. 31081. Allow at least five minutes warm-up period before making adjustments. Use the regular antenna for all adjustments.

The procedure is as follows:

1. Make a list of the four desired stations, arranged in order from low to high frequencies.
2. Push in the broadcast dial-tuning button (second from right), and manually tune in the first station on the list.
3. Push in station button No. 1 (left-hand) and adjust No. 1 push button adjustment to receive this station. Turn the adjusting screw all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust for each of the remaining three stations in the same manner. (Clockwise adjustment of the screw tunes the circuits to lower frequencies.)
5. After installation, and with antenna properly connected, readjust C2 as outlined in note under "Alignment Procedure."

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 32259 | Capacitor—3-section trimmer bank 2-10, 3-30, 100-330 mmfd. (C33, C3, C2) |
| 12629 | Capacitor—56 mmfd. (C18) |
| 12723 | Capacitor—56 mmfd. (C1, C31) |
| 30406 | Capacitor—100 mmfd. (C4) |
| 14262 | Capacitor—110 mmfd. (C17) |
| 12404 | Capacitor—120 mmfd. (C19, C20) |
| 32370 | Capacitor—120 mmfd. (C22) |
| 14712 | Capacitor—180 mmfd. (C12) |
| 30433 | Capacitor—470 mmfd. (C28) |
| 32269 | Capacitor—520 mmfd. (C30) |
| 12635 | Capacitor—1,000 mmfd. (C11) |
| 4881 | Capacitor—3,300 mmfd. (C29) |
| 30303 | Capacitor—.0035 mfd. (C14) |
| 4838 | Capacitor—.005 mfd. (C21) |
| 14393 | Capacitor—.01 mfd. (C13) |
| 4886 | Capacitor—.05 mfd. (C8, C10) |
| 4839 | Capacitor—.1 mfd. (C15, C39) |
| 30965 | Capacitor—.25 mfd. (C7) |
| 12741 | Capacitor—.5 mfd. (C16) |
| 31581 | Cell—1 volt bias cell |
| 32257 | Coil—Push button osc. shunt coil (L8, L9) |
| 32254 | Coil—Broadcast oscillator coil (L17) |
| 32258 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32366 | Coil—"C" band oscillator coil (L15, L16) |
| 32256 | Coil—Push button osc. series coil |
| 32253 | Coil—Push button antenna and oscillator coil (L20, L26) |
| 32252 | Coil—Push button antenna and oscillator coil (L21, L27) |
| 32251 | Coil—Push button antenna and oscillator coil (L22, L28) |
| 32250 | Coil—Push button antenna and oscillator coil (L23, L29) |
| 32365 | Condenser—2-gang variable condenser (C5, C6, C9, C34) |
| 32369 | Contact—Dial lamp spring contact (S3) |
| 12006 | Core—Variable core and stud for I.F. transformers |
| 12800 | Core—Variable core and stud for antenna coil |
| 32268 | Cord—Drive cord |
| 32266 | Drum—Variable condenser drive drum |
| 31580 | Holder—Bias cell holder |
| 32267 | Indicator—Dial scale pointer |
| 31480 | Lamp—Dial lamp |
| 14404 | Plug—7-prong plug—mates with socket on supply cable |
| 31373 | Pulley—Drive cord pulley |
| 30546 | Resistor—470 ohms, ½ watt (R12) |
| 13714 | Resistor—5,600 ohms, ½ watt (R5) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R20) |
| 12454 | Resistor—33,000 ohms, ½ watt (R4, R15) |
| 12199 | Resistor—270,000 ohms, ½ watt (R6) |
| 30963 | Resistor—820,000 ohms, ½ watt (R10) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 30208 | Resistor—1.2 meg., ½ watt (R9) |
| 12679 | Resistor—2.2 meg., ½ watt (R2, R7) |
| 30271 | Resistor—4.7 meg., ½ watt (R3) |
| 14887 | Retainer—Drive cord pulley retaining washer |
| 32261 | Screw—Push button oscillator coil adjustment screw and mounting nut |
| 3993 | Screw—No. 6-32 x ¼ square head set screw for switch collar |
| 4669 | Screw—No. 8-32 square head set screw from drive drum |
| 32265 | Shaft—Tuning knob shaft and retainer |
| 3682 | Shield—Detector tube shield |
| 3950 | Shield—Oscillator tube shield |
| 31365 | Socket—Dial lamp socket |
| 5119 | Socket—3-contact speaker cable socket |
| 31251 | Socket—8-contact tube socket |
| 32481 | Spring—Drive cord tension spring |
| 32255 | Switch—Push button switch (S18, S19, S20, S21, S22, S23, S26, S27, S28, S29, S32, S33) |
| 30953 | Switch—Tone control switch (S2) |
| 32368 | Transformer—Driver and output transformer pack (T1, T2) |
| 14261 | Transformer—First I.F. transformer (L11, L12, C17, C18) |
| 14308 | Transformer—Second I.F. transformer (L13, L14, C12, C19, C20, R20) |
| 32367 | Volume Control and Power Switch (R8, S1) |
| | **SPEAKER ASSEMBLIES** Model 96BT6 (Speaker 84307-3) |
| 32326 | Cone—Speaker cone and voice coil |
| 5118 | Plug—3-prong male plug |
| 32325 | Speaker—Complete |
| | **SPEAKER ASSEMBLIES** Model 96BK6 (Speaker 84477-2) |
| 32328 | Cone—Speaker cone and voice coil |
| 5118 | Plug—3-prong male plug |
| 32327 | Speaker—Complete |
| | **VIBRATOR POWER UNIT ASSEMBLIES (RS-79B)** |
| 13894 | Capacitor—390 mmfd. (C40) |
| 4937 | Capacitor—.01 mfd. (C27) |
| 12484 | Capacitor—.25 mfd. (C25) |
| 30867 | Capacitor—0.5 mfd. (C32, C38) |
| 32152 | Capacitor—Capacitor - 15-15 mfd. Electrolytic (C23, C24) |
| 14289 | Clip—Battery clip for cable |
| 31794 | Coil—Choke coil (L18) |
| 6516 | Connector—Fuse connector |
| 5140 | Fuse—5 ampere |
| 14281 | Resistor—68 ohms, ½ watt (R11) |
| 14439 | Resistor—100 ohms, ½ watt (R13) |
| 3153 | Resistor—1,500 ohms, 1 watt (R14) |
| 30734 | Resistor—5,600 ohms, ½ watt (R19) |
| 4786 | Socket—6-prong socket for plug-in vibrator unit |
| 14409 | Socket—7-contact female socket for vibrator cable |
| 32371 | Transformer—Vibrator transformer (T3, L19, C26) |
| 14309 | Vibrator—(L24) |
| | **A. C. POWER UNIT ASSEMBLIES** Model CV-9 |
| 32223 | Capacitor—15 mfd. (C37) |
| 32222 | Capacitor—2-sections 15 mfd. each (C35, C36) |
| 14409 | Plug—7-contact female plug for power out cable |
| 30545 | Resistor—180 ohms, ½ watt (R17) |
| 4687 | Resistor—1,000 ohms, ½ watt (R18) |
| 13486 | Resistor—2,200 ohms, 1 watt (R16) |
| 31251 | Socket—Tube socket |
| 32221 | Transformer—Power transformer 100-130, 140-160, 195-250 volts, 25-60 cycles (T4) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32279 | Button—Station selector push button |
| 31935 | Clip—Spring clips to hold dial |
| 32372 | Dial—Station selector dial scale |
| 32277 | Escutcheon—Dial bezel and crystal |
| 32278 | Escutcheon—Push button bezel |
| 31713 | Knob—Tuning knob |
| 31355 | Knob—Volume control knob |
| 32281 | Marker—Push button marker for broadcast band |
| 32280 | Marker—Push button marker for short wave band |
| 32067 | Marker—One set station call letter markers |
| 12993 | Screw—Set screw for knob, Stock No. 31713 |
| 14267 | Screw—Chassis mounting screw assembly—Model 96BT6 only |
| 30467 | Screw—Chassis mounting screw assembly—Model 96BK6 only |
| 14270 | Spring—Spring for knob, Stock No. 31355 |

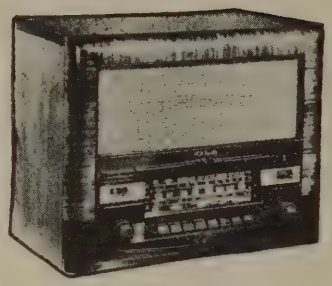
# MODELS 96E2, 96K5, 96K6, 96T7, 97K2, and 97T2

**Chassis No. RC-351L RC-351L RC-351L RC-351L RC-351K RC-351K**

## Six- and Seven-Tube, Three-Band, Electric-Tuning, A-C Superheterodyne Receivers

*Model 96E2*
**6 Tubes, 8-in. Speaker**

*Model 96T7*
**6 Tubes, 6-in. Speaker**



*Model 97T2*
**7 Tubes, 6-in. Speaker**

## Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A) ..... 540-1,720 kc
"Medium Wave" (B) ..... 2.3-7.0 mc
"Short Wave" (C) ..... 7.0-22 mc

Six Electric Tuning Positions ..... 550-1,500 kc

2 stations between approximately 550- 950 kc
2 stations between approximately 690-1,225 kc
2 stations between approximately 890-1,500 kc

TUBE COMPLEMENT

(1) RCA-6K8 ..... First Detector—Oscillator
(2) RCA-6K7 ..... Intermediate-Frequency Amplifier
(3) RCA-6H6 ..... Second Detector and A.V.C.
(4) RCA-6F5 ..... Audio Voltage Amplifier
(5) RCA-6F6-G ..... Audio Power Amplifier
(6) RCA-5Y3-G ..... Full-Wave Rectifier
(7) RCA-6U5 (Models 97K2 and 97T2) .... Tuning Tube

Pilot Lamps (1 on Models 96K5, 96K6, 96E2, 96T7) (2 on Models 97K2, 97T2) ..... Mazda No. 47, 6.3 volts, .15 amp.

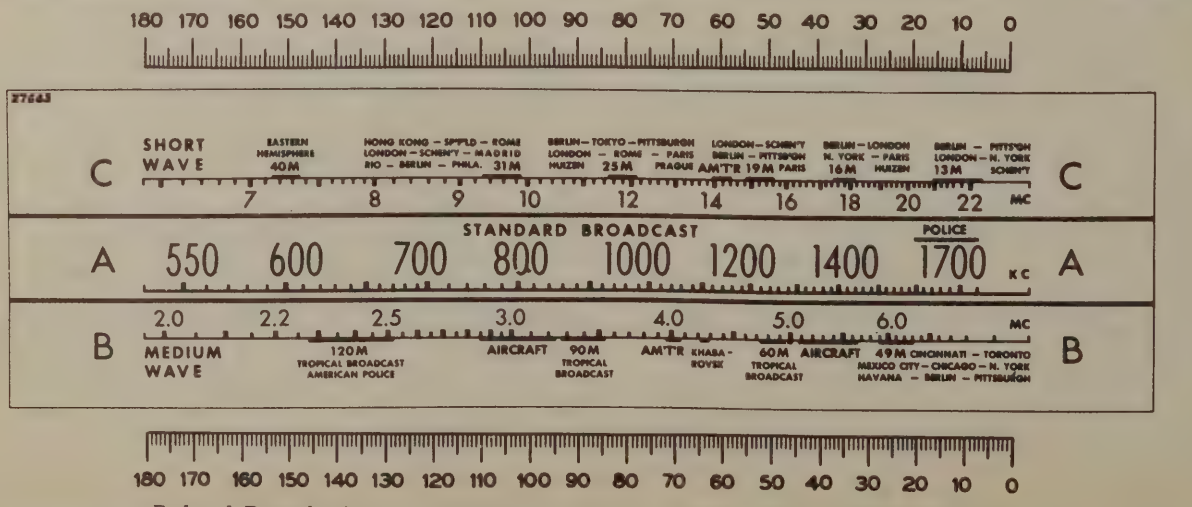
POWER SUPPLY RATING

Rating A ..... 105-125 volts, 50-60 cycles, 80 watts
Rating B ..... 105-125 volts, 25-60 cycles, 80 watts
Rating C ..... 100-130/140-160/195-250 volts, 40-60 cycles, 80 watts

| POWER OUTPUT | 96T7, 97T2 | 96E2, 96K5, 96K6, 97K2 |
|---|---|---|
| Undistorted | 2.0 watts | 2.5 watts |
| Maximum | 4.0 watts | 4.5 watts |

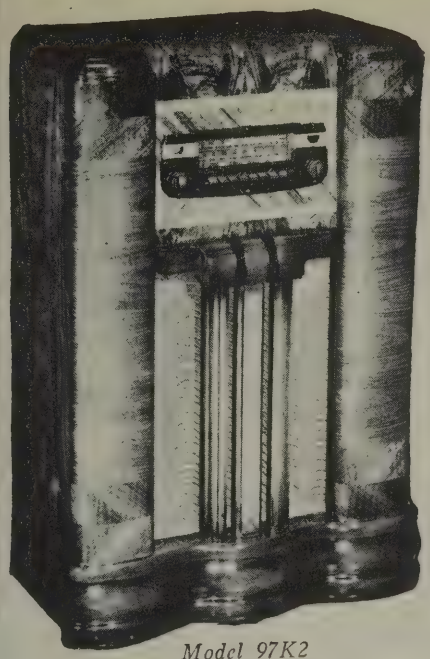
LOUDSPEAKER

Type ..... Electrodynamic
Voice-coil impedance 84308-1, 84308-4, RL63H-3, RL70H-1.. 2.2 ohms, RL79-1..... 3.4 ohms..... at 400 cycles

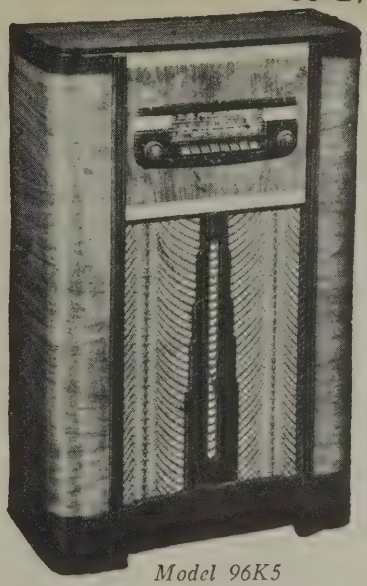

180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27643
C
SHORT WAVE
EASTERN HEMISPHERE 40M
HONG KONG – SPT'LD – ROME
LONDON – SCHEN'Y – MADRID
RIO – BERLIN – PHILA. 31M
BERLIN – TOKYO – PITTSBURGH
LONDON – ROME – PARIS
MUNICH 25M PRAGUE
LONDON – SCHEN'Y
BERLIN – PITTS'GH
AM'TR 19M PARIS
BERLIN – LONDON
N. YORK – PARIS
16M MUNICH
BERLIN – PITT'GH
LONDON – N. YORK
13M SCHEN'Y
7 8 9 10 12 14 16 18 20 22 MC
STANDARD BROADCAST
POLICE
A
550 600 700 800 1000 1200 1400 1700 KC
2.0 2.2 2.5 3.0 4.0 5.0 6.0 MC
B
MEDIUM WAVE
120M TROPICAL BROADCAST AMERICAN POLICE
AIRCRAFT
90M TROPICAL BROADCAST
AM'TR KHABAROVSK
60M TROPICAL BROADCAST
AIRCRAFT
49M CINCINNATI – TORONTO
MEXICO CITY – CHICAGO – N. YORK
HAVANA – BERLIN – PITTSBURGH
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

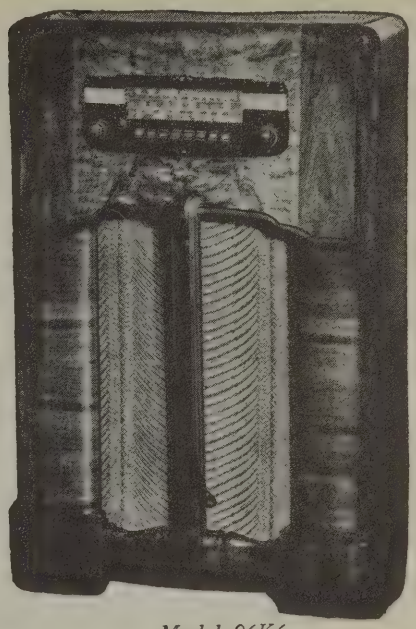
# 96E2, 96K5, 96K6, 96T7, 97K2, 97T2



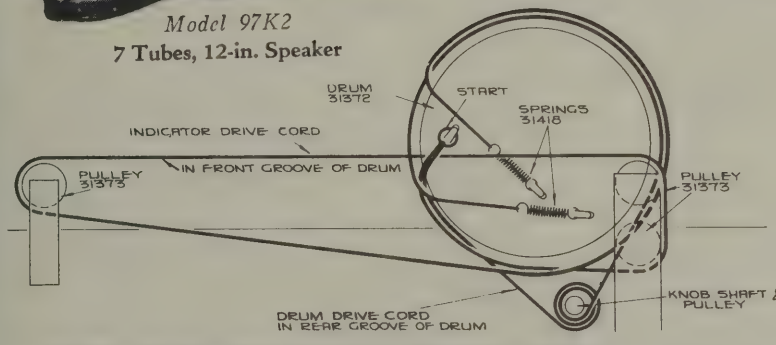
*Model 97K2*
**7 Tubes, 12-in. Speaker**



*Model 96K5*
**6 Tubes, 12-in. Speaker**



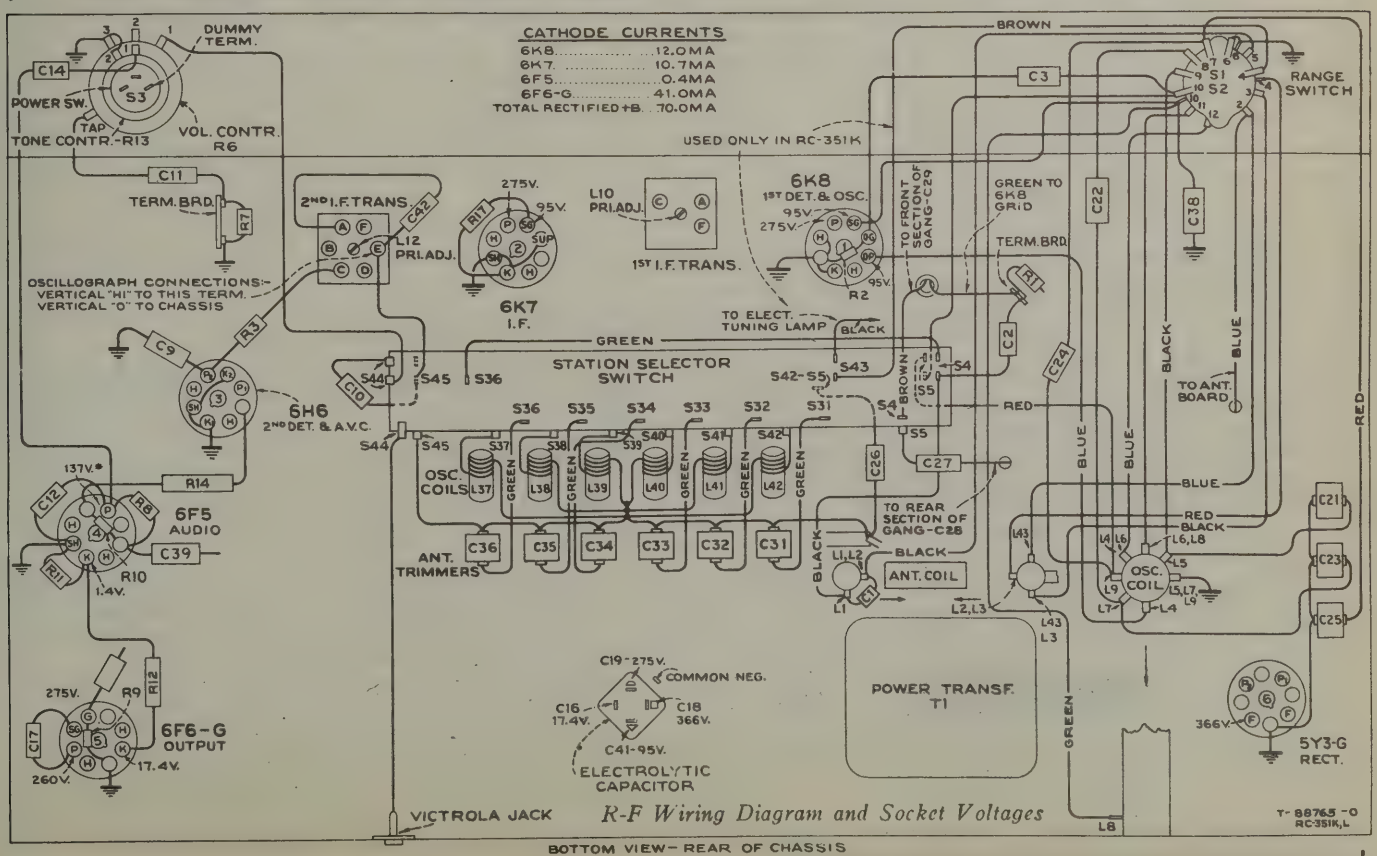
*Model 96K6*
**6 Tubes, 12-in. Speaker**




**DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY**

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.



**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

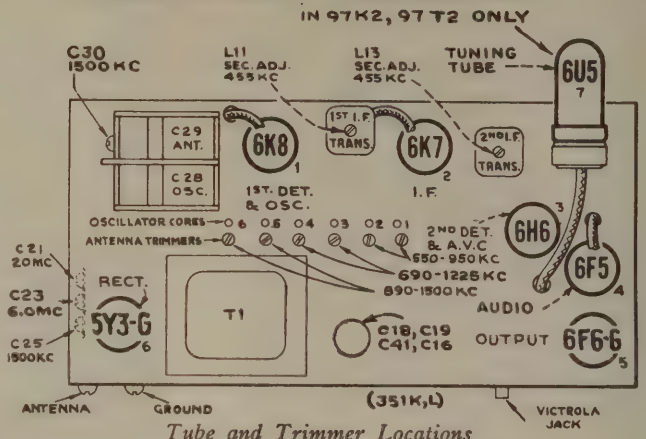
**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

# ALIGNMENT PROCEDURE




*Tube and Trimmer Locations*

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the left-hand end mark, and gang condenser fully meshed.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

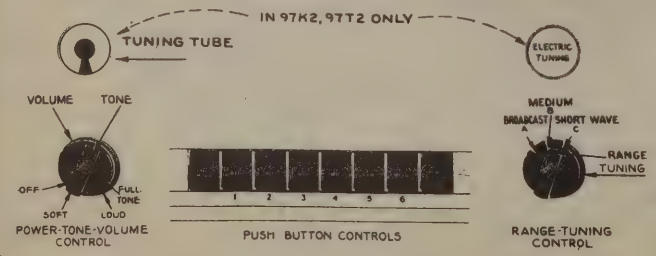
| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L12 and L13 (2nd I-F Trans.) |
| 2 | 6K8 det. grid cap, in series with .01 mfd. | 455 kc | | L10 and L11 (1st I-F Trans.) |
| 3 | Antenna Terminal, in series with 200 mmf. | 600 kc | 600 kc (150.5°) "A" band | L9 |
| 4 | | 1,500 kc | 1,500 kc (28°) "A" band | C25 (osc.) C30 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna Terminal, in series with 400 ohms | 6 mc | 6 mc (26.5°) "B" band | C23 (osc.)* |
| 7 | | 20 mc | 20 mc (22°) "C" band | C21 (osc.)* |
| 8 | Follow "Adjustments for Electric Tuning." | | | |

* Use minimum capacity peak if two peaks can be obtained, and rock gang condenser slightly while adjusting C23 and C21.

**Note.**—Oscillator tracks 455 kc above signal on all bands.

# ADJUSTMENTS FOR ELECTRIC TUNING

These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.




*Location of Controls*

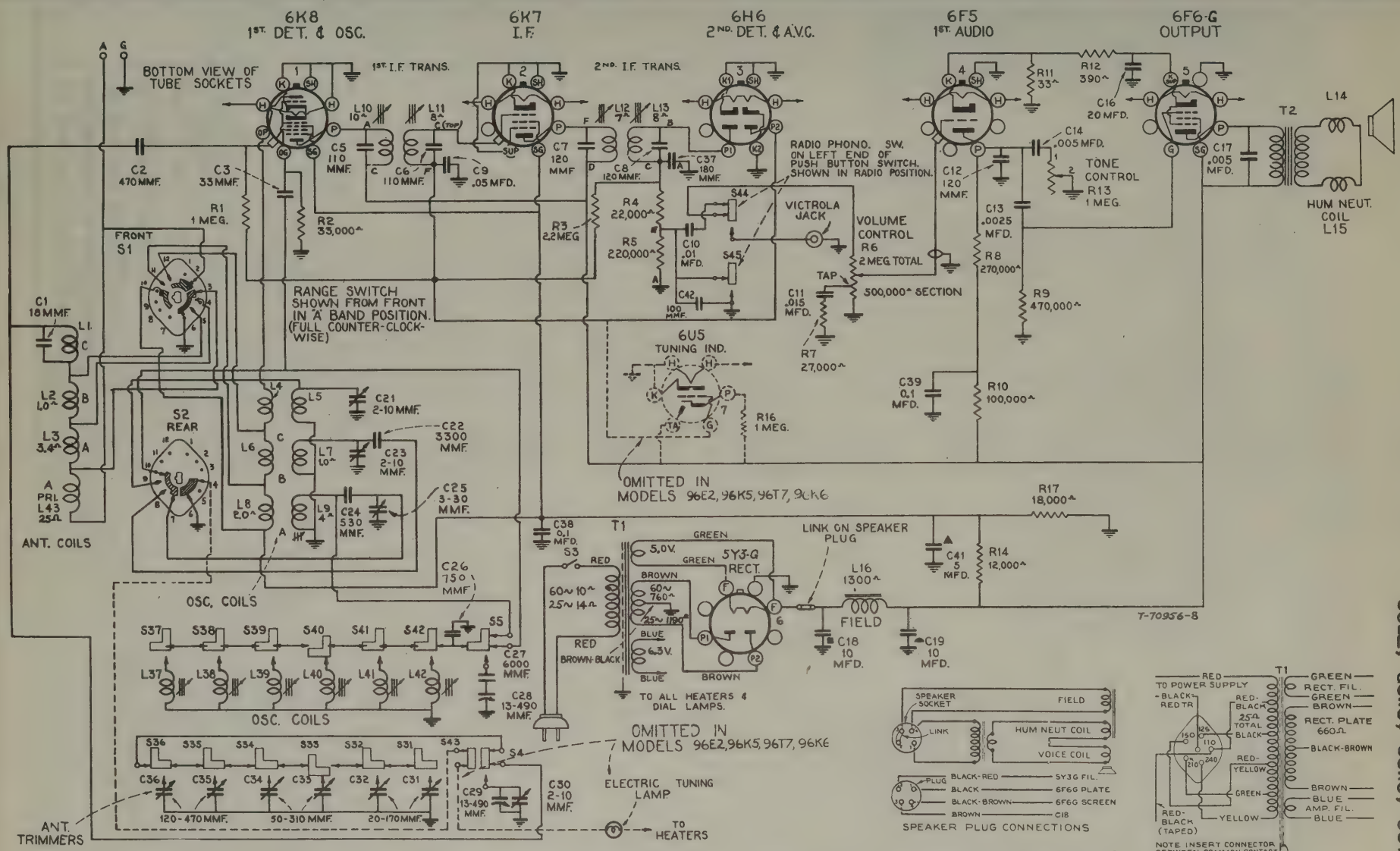
The left-hand push button is a Victrola-Attachment switch. The right-hand push button is for dial tuning.

The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

**Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**

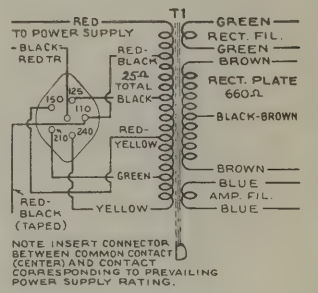
5. Adjust for each of the remaining five stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.




*Schematic Circuit Diagram*




**Above** — Connections and Colors of Loudspeaker and Cable.




**Above** — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

**Precautionary Lead Dress.—**

1. Dress power-switch leads against left apron to prevent hum pickup.
2. Dress R1 away from front of chassis.
3. Electric-tuning lamp leads must be dressed in front of range switch.
4. Dress lead from L5 to range switch away from other leads.
5. Dress leads away from antenna coil.
6. Dress other parts and leads away from R14, as it becomes heated.

# REPLACEMENT PARTS

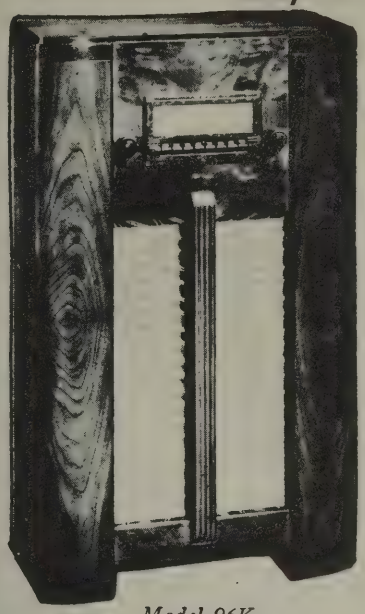
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 14517 | Board—Antenna ground terminal board |
| 30752 | Bracket—Magic Eye bracket and holder—Models 97T2 and 97K2 |
| 32670 | Bracket—Dial color plate and lamp brackets |
| 32684 | Cable—Indicator drive cable |
| 30766 | Cap—Magic Eye cap |
| 12110 | Cap—Tube shield cap |
| 31400 | Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25) |
| 12722 | Capacitor—18 mmfd. (C1) |
| 32486 | Capacitor—Antenna trimmer capacitor bank. (C31, C32, C33, C34, C35, C36) |
| 12948 | Capacitor—33 mmfd. (C3) |
| 12720 | Capacitor—100 mmfd. (C42) |
| 14262 | Capacitor—109 mmfd. (C5, C6) |
| 12724 | Capacitor—120 mmfd. (C12) |
| 12404 | Capacitor—120 mmfd. (C7, C8) |
| 14712 | Capacitor—180 mmfd. (C37) |
| 30433 | Capacitor—470 mmfd. (C2) |
| 32492 | Capacitor—530 mmfd. (C24) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 31403 | Capacitor—3300 mmfd. (C22) |
| 31405 | Capacitor—6000 mmfd. (C27) |
| 5107 | Capacitor—.0025 mfd. (C13) |
| 4838 | Capacitor—.005 mfd. (C14, C17) |
| 14393 | Capacitor—.01 mfd. (C10) |
| 4839 | Capacitor—0.1 mfd. (C38, C39) |
| 11315 | Capacitor—.015 mfd. (C11) |
| 4886 | Capacitor—.05 mfd. (C9) |
| 32485 | Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 32493 | Coil—Antenna coil—A, B, and C bands (L1, L2, L3, L43) |
| 31951 | Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9) |
| 31383 | Coil—Oscillator coil—A band (L41, L42) |
| 32487 | Coil—Oscillator coil—A band (L39, L40) |
| 31385 | Coil—Oscillator coil—A band (L37, L38) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 32668 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 32634 | Cord—Indicator pointer and variable condenser drum drive cord |
| 30905 | Core—Adjustable core for i-f transformer |
| 31386 | Core—Adjustable core and stud for oscillator coil Stock Nos. 31383 and 31385 |
| 12800 | Core—Adjustable core and stud for oscillator coil Stock No. 32487 |
| 31372 | Drum—Variable condenser drive cord drum and calibrator dial |
| 32552 | Indicator—Dial pointer and clip |
| 11891 | Lamp—Dial or Electric Tuning indicator lamp |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31373 | Pulley—Indicator drive cord pulley |
| 14671 | Resistor—33 ohms, ½ watt (R11) |
| 31388 | Resistor—390 ohms, 1 watt (R12) |
| 31389 | Resistor—12,000 ohms, wire wound, 5 watts (R14) |
| 30151 | Resistor—18,000 ohms, 1 watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 14560 | Resistor—100,000 ohms, ½ watt (R10) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9) |
| 12013 | Resistor—1 meg., 1/10 watt (R16) Models 97T2 and 97K2 |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Retaining spring for station selector knob shaft |
| 14887 | Retainer—Drive cord pulley retainer |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31372 |
| 32671 | Shaft—Station selector knob shaft and pulley |
| 31199 | Shield—Electric tuning lamp shield |
| 31364 | Socket—Dial lamp socket |
| 31365 | Socket—"Electric Tuning" indicator lamp insulated socket Model 97T2 and 97K2 |
| 13871 | Socket—Magic Eye socket (Models 97T2 and 97K2) |
| 31251 | Socket—Octal base tube socket |
| 14278 | Socket—Pickup socket |
| 31418 | Spring—Indicator, or drum drive cord tension spring |
| 32669 | Switch—Range switch (S1, S2) |
| 31370 | Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 14376 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 14283 | Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5) |
| 31445 | Transformer—Power transformer 100-120 volts, 25-60 cycle (T1) |
| 31380 | Transformer—Power transformer 100-120 volts, 50-60 cycle (T1) |
| 31446 | Transformer—Power transformer 100-130, 140-160, 200-250 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (84308-4) Model 96T7** |
| 32918 | Cone and Voice Coil assembly complete with metal housing |
| 32919 | Field Coil Complete |
| 32920 | Output Transformer |
| 31302 | Plug—4-contact male for speaker |
| | **SPEAKER ASSEMBLIES (84308-1) Models 96T7 and 97T2** |
| 31443 | Cone—Speaker cone and voice coil (L14) |
| 31442 | Speaker—Complete |
| 31444 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES (RL-79-1) Model 97T2** |
| 32907 | Cap—Cone center dust cap |
| 32906 | Coil—Hum neutralizing coil |
| 33077 | Coil—Speaker field coil |
| 32934 | Cone—Cone and voice coil assembly |
| 31302 | Plug—4-prong male speaker plug |
| 33078 | Speaker—Speaker complete |
| 32905 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES (RL-63H-3) Model 96E2** |
| 31825 | Cap—Speaker cone center dust cap |
| 11469 | Coil—Hum neutralizing coil (L17) |
| 12012 | Coil—Speaker field coil (L18) |
| 31310 | Cone—Speaker cone and voice coil (L16) |
| 31302 | Plug—4-contact male plug for speaker |
| 31824 | Speaker complete |
| 14355 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES (RL-70H-1) Models 96K5 and 97K2** |
| 31825 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31302 | Plug—4-contact male plug |
| 31592 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 14355 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31397 | Button—Push button |
| 31456 | Cover—8-protective covers for push button markers |
| 32673 | Dial—Dial scale and crystal (glass) |
| 32672 | Escutcheon—Dial escutcheon and dial—less buttons—Models 96K5, 96E2, and 96T7 |
| 32674 | Escutcheon—Dial escutcheon and dial—less buttons—Models 97K2 and 97T2 |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31589 | Marker—1 set station call letter markers |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31457 | Marker—"Victrola" push button marker |
| 11210 | Screw—Chassis mounting screws, washers and lockwashers. Models 96K5, 97K2 and 96E2 (3 required) |
| 31390 | Screw—Chassis mounting screws, washers and lockwashers Models 96T7 and 97T2. (Sufficient for one chassis) |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |
| 14270 | Spring—Retaining spring for knob Stock Nos. 30773 and 31355 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |

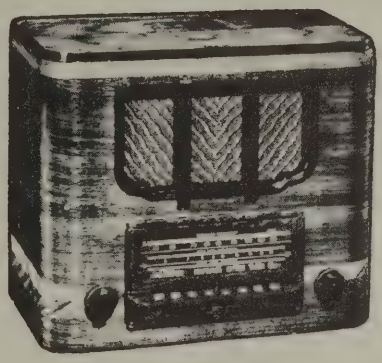
# MODELS 96K 96T2 and 97K

## * CHASSIS No. RC-351 RC-351F

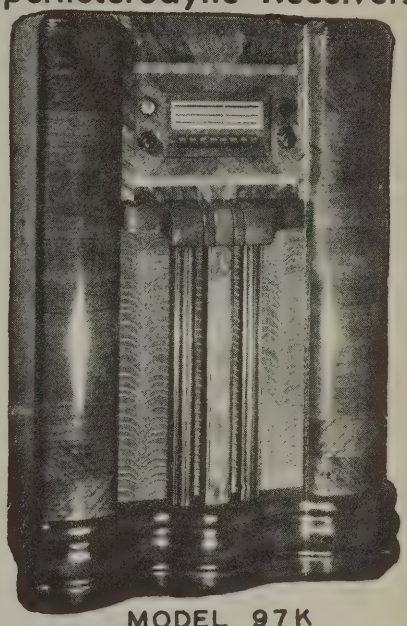
## 6 AND 7 Tube, Electric-Tuning, Two-Band, A-C, Superheterodyne Receivers



*Model 96K*



*Model 96T2*



MODEL 97K

## Electrical Specifications

FREQUENCY RANGES
"Standard Broadcast" (A)..... 540-1,720 kc "Short Wave" (C)..... 5.8-18.0 mc
Six Electric Tuning Positions..... 550 to 1,500 kc
Two stations between approximately 550- 950 kc
* Two stations between approximately 680-1,180 kc (RC-351F)
* Two stations between approximately 690-1,225 kc (RC-351F "M," RC 351F "R")
Two stations between approximately 890-1,500 kc

Intermediate Frequency..... 455 kc

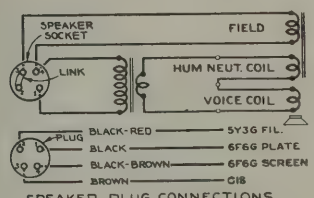
RCA TUBE COMPLEMENT
(1) RCA-6K8..... First Detector-Oscillator
(2) RCA-6K7..... Intermediate-Frequency Amplifier
(3) RCA-6H6..... Second Detector and A.V.C.
(4) RCA-6F5..... Audio Voltage Amplifier
*(5) RCA-6F6-G..... Audio Power Output
*(6) RCA-5Y3-G..... Full-Wave Rectifier
*(7) RCA-6U5..... Tuning Indicator

Pilot Lamps (2)..... Mazda No. 47, 6.3 volts, 0.15 amp.

| POWER SUPPLY RATINGS | 96T2, 96K | 97K |
|---|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 75 watts | 80 watts |
| Rating B | 105-125 volts, 25-60 cycles, 75 watts | 80 watts |
| Rating C | 100-130/140-160/195-250 volts, 40-60 cycles, 75 watts | 80 watts |

| POWER OUTPUT | 96T2 | 96K 97K |
|---|---|---|
| Undistorted | 2.0 watts | 2.5 watts |
| Maximum | 4.0 watts | 4.5 watts |

| LOUDSPEAKER Model | 96T2 | 96K 97K |
|---|---|---|
| Type | 6 inch, electrodynamic | 12 inch, electrodynamic |
| Voice Coil Impedance at 400 cycles | 2.6 ohms | 2.2 ohms |




SPEAKER PLUG CONNECTIONS

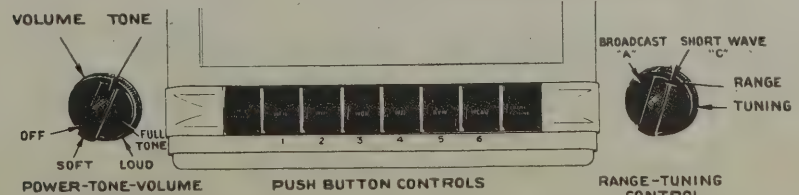
*** 2ND PROD**

| | | |
|---|---|---|
| 96K, 96T2 | RC-351 | "M" |
| 97K | RC-351F | "M" |

*** 3RD PROD**

| | | |
|---|---|---|
| 96K, 96T2 | RC-351 | "R" |
| 97K | RC-351F | "R" |

*See following page*




POWER-TONE-VOLUME CONTROL — PUSH BUTTON CONTROLS — RANGE-TUNING CONTROL

### MODEL 96T2

ADDITIONAL REPLACEMENT PART:

| Stock No. | |
|---|---|
| 14616 | Coil - Field coil for speaker stamped 84308-1 |

SPEAKER STAMPED 84308-4
Replacement parts:

| Stock No. | |
|---|---|
| 32918 | Cone - Cone and voice coil |
| 32919 | Coil - Field coil |
| 32920 | Transformer - output trans. |
| 31302 | Plug - 4 contact male plug |

Voice coil impedance 2.2 ohms
Field coil resistance 1290 ohms

# MODELS 96K, 96T2

**Changes in 2nd and 3rd Production:**

The 2nd and 3rd productions are identified by the letters "M" and "R" respectively after the RC number stamping. (Thus: RC-351M, or RC-351R.)

For service data applying to circuit, alignment, chassis layout, R-F and I-F coils, electrolytic capacitors, and push-button ranges of the 2nd and 3rd production runs, refer to the corresponding "M" and "R" changes in the Service Note for Model 97K.

| | 1ST PRODUCTION | 2ND PRODUCTION (Chassis Stamped "M") | 3RD PRODUCTION (Chassis Stamped "R") |
|---|---|---|---|
| **PUSH-BUTTON FREQUENCY RANGES** | | | |
| Button No. 1 (left), and No. 2 | 550- 950 kc | 550- 950 kc | 550- 950 kc |
| Button No. 3 and 4 | 680-1,180 kc | 690-1,225 kc | 690-1,225 kc |
| Button No. 5 and 6 | 890-1,500 kc | 890-1,500 kc | 890-1,500 kc |
| **ANTENNA TRIMMER BANK CAPACITANCE** | | | |
| C31 and C32 | 20-170 mmfd. | 20-170 mmfd. | 20-170 mmfd. |
| C33 and C34 | 70-310 mmfd. | 50-310 mmfd. | 50-310 mmfd. |
| C35 and C36 | 120-470 mmfd. | 120-470 mmfd. | 120-470 mmfd. |
| **TUBES** | | | |
| Power output tube | 6F6 | 6F6-G | 6F6-G |
| Rectifier tube | 5W4 | 5Y3-G | 5Y3-G |
| | **Stock No.** | **Stock No.** | **Stock No.** |
| Cap—Tube shield cap for 6F5 | .... | 12110 | 12110 |
| Capacitor—6.8 mmfd. (C1) | 14079 | 14079 | .... |
| Capacitor—15 mmfd. (C1) | .... | .... | 12896 |
| Capacitor—Antenna trimmer capacitor bank (C31, C32, C33, C34, C35, C36) | 31387 | 32486 | 32486 |
| Capacitor—100 mmfd. (C5, C6, C7, C8) | 30904 | 30904 | .... |
| Capacitor—109 mmfd. (C5, C6) | .... | .... | 14262 |
| Capacitor—120 mmfd. (C7, C8) | .... | .... | 12404 |
| Capacitor—180 mmfd. (C37) mounted under chassis | 13003 | 13003 | .... |
| Capacitor—180 mmfd. (C37) in 2nd I-F trans. | .... | .... | 14712 |
| Capacitor—620 mmfd. (C24) | 31381 | 31381 | .... |
| Capacitor—530 mmfd. (C24) | .... | .... | 32492 |
| Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), cardboard case, mounted horizontally | 31371 | .... | .... |
| Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), metal-case type, mounted vertically | .... | 32485 | 32485 |
| Coil—Antenna coil "A" and "C" bands (L1, L2, L3) mounted vertically | 31378 | 31378 | .... |
| Coil—Antenna coil "A" and "C" bands (L1, L2, L3, L43) mounted horizontally | .... | .... | 32488 |
| Coil—Oscillator coil "A" and "C" bands (L4, L5, L6, L7) mounted vertically (no magnetite core) | 31377 | 31377 | .... |
| Coil—Oscillator coil "A" and "C" bands (L4, L5, L6, L7) mounted horizontally (with magnetite core) | .... | .... | 32489 |
| Coil—Push button oscillator coil (L37 or L38) | 31385 | 31385 | 31385 |
| Coil—Push button oscillator coil (L39 or L40) | 31384 | 32487 | 32487 |
| Coil—Push button oscillator coil (L41 or L42) | 31383 | 31383 | 31383 |
| Core—Adjustable core and stud for oscillator coil, Stock No. 32489 | .... | .... | 12800 |
| Resistor—220,000 ohms, ½ watt (R5) | 12264 | 12264 | .... |
| Resistor—220,000 ohms, 1/10 watt (R5) | .... | .... | 11398 |
| Switch—Range switch (S1) | 31367 | 31367 | 32490 |
| Transformer—1st I-F trans. (L10, L11, C5, C6) | 30902 | 30902 | 14376 |
| Transformer—2nd I-F trans. (L12, L13, C7, C8) | 30903 | 30903 | .... |
| Transformer—2nd I-F trans. (L12, L13, C7, C8, C37, R4, R5) | .... | .... | 14283 |
| Dial—Dial scale (glass) | 31396 | 31396 | 32356 |

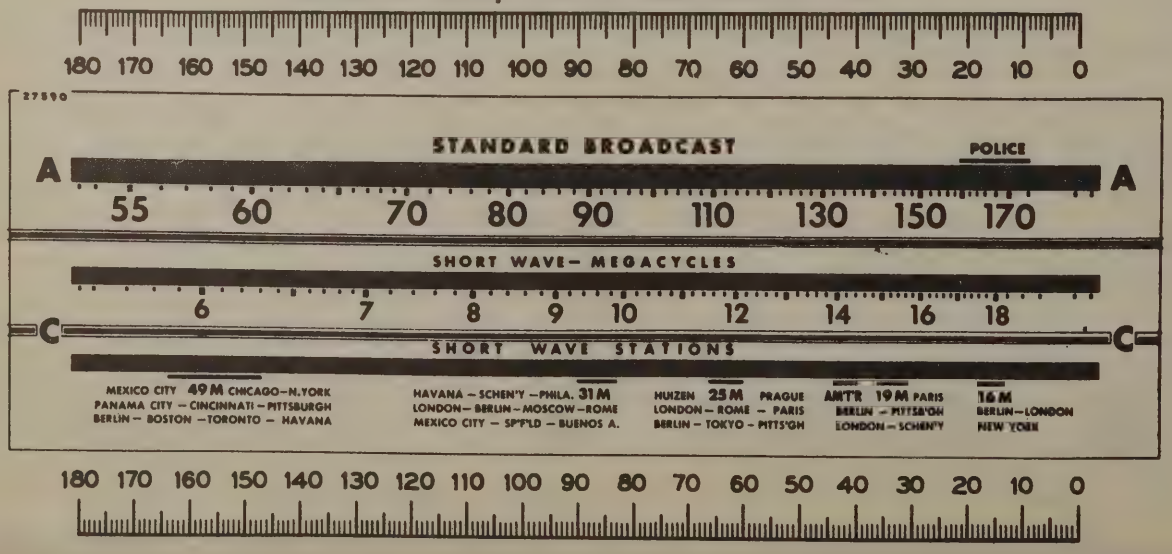
There are three different productions of Model 97K, conveniently identified by rear chassis stamping as RC-351F, RC-351F "M," and RC-351F "R."

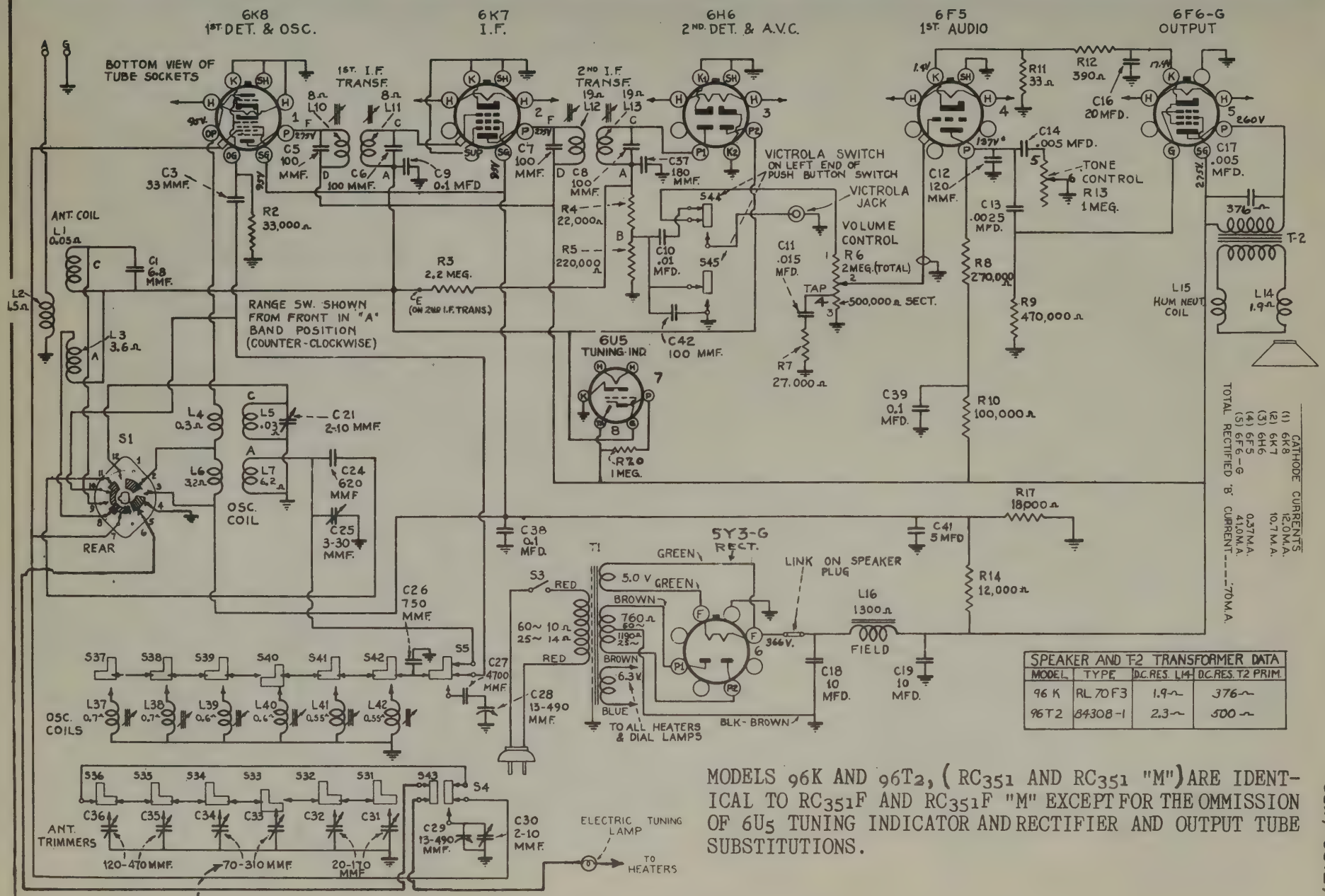
RC-351F has a cardboard-case electrolytic with five leads.

RC-351F "M" has a metal-case electrolytic with lug contacts, and the range of No. 3 and 4 push buttons is 690-1,225 kc instead of 680-1,180 kc as in RC-351F.

RC-351F "R" has the metal-case electrolytic, and the same push-button ranges as RC-351F "M," and in addition has different antenna coil, oscillator coil, range switch, and i-f transformers.

## Calibration Scale, RC-351F and RC-351F "M"

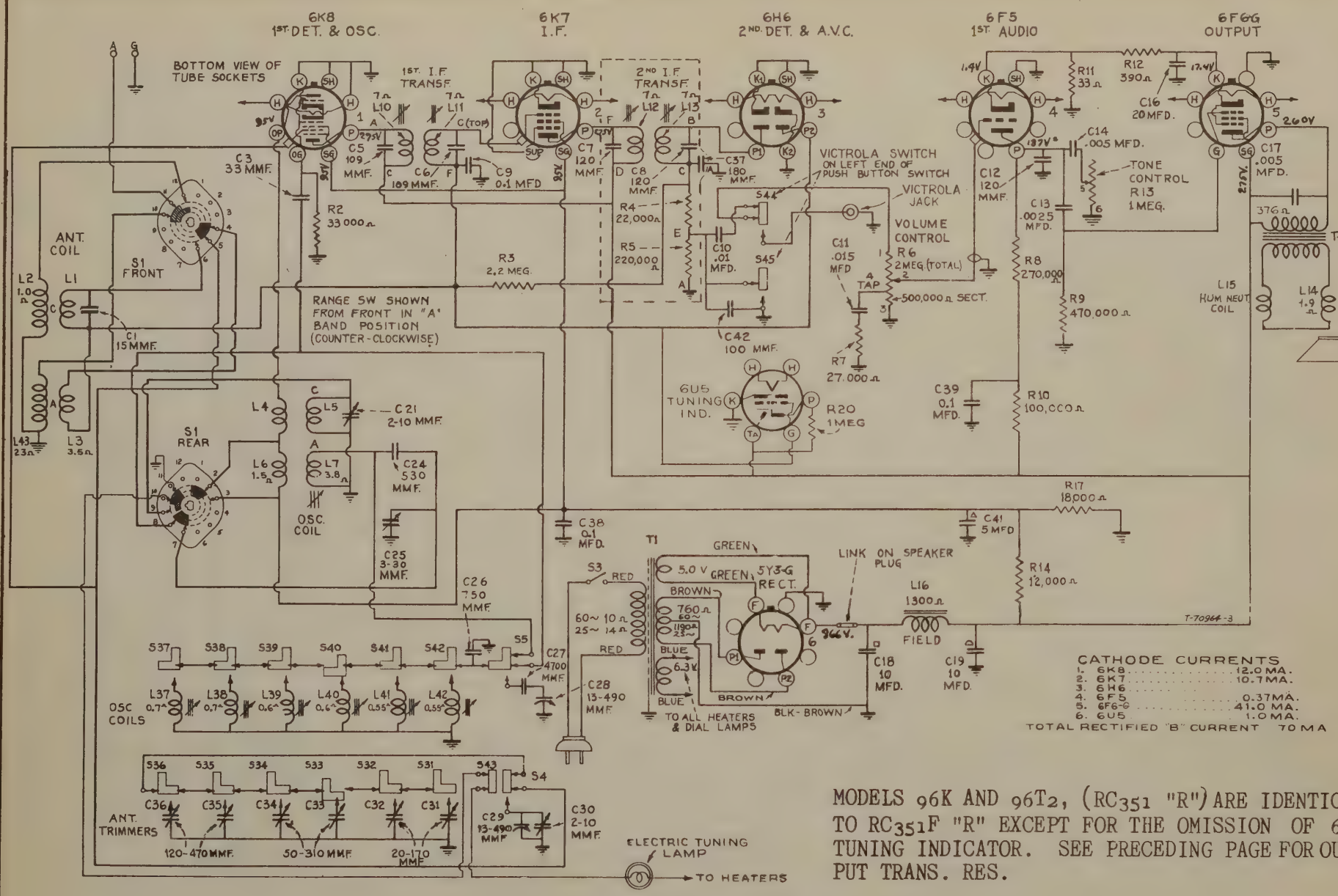

180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
27590
STANDARD BROADCAST
POLICE
A
A
55 60 70 80 90 110 130 150 170
SHORT WAVE—MEGACYCLES
6 7 8 9 10 12 14 16 18
C
C
SHORT WAVE STATIONS
MEXICO CITY 49 M CHICAGO—N.YORK
PANAMA CITY — CINCINNATI — PITTSBURGH
BERLIN — BOSTON — TORONTO — HAVANA
HAVANA — SCHEN'Y — PHILA. 31 M
LONDON — BERLIN — MOSCOW — ROME
MEXICO CITY — SP'F'LD — BUENOS A.
HUIZEN 25 M PRAGUE
LONDON — ROME — PARIS
BERLIN — TOKYO — PITT'GH
AMTR 19 M PARIS
BERLIN — PITTSB'GH
LONDON — SCHEN'Y
16 M
BERLIN — LONDON
NEW YORK
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0




| SPEAKER AND T2 TRANSFORMER DATA | | | |
|---|---|---|---|
| MODEL | TYPE | D.C. RES. L14 | D.C. RES. T2 PRIM. |
| 96K | RL 70F3 | 1.9Ω | 376Ω |
| 96T2 | 84308-1 | 2.3Ω | 500Ω |

MODELS 96K AND 96T2, (RC351 AND RC351 "M") ARE IDENTICAL TO RC351F AND RC351F "M" EXCEPT FOR THE OMMISSION OF 6U5 TUNING INDICATOR AND RECTIFIER AND OUTPUT TUBE SUBSTITUTIONS.

**Chassis No. RC-351F and RC-351F "M"**




CATHODE CURRENTS

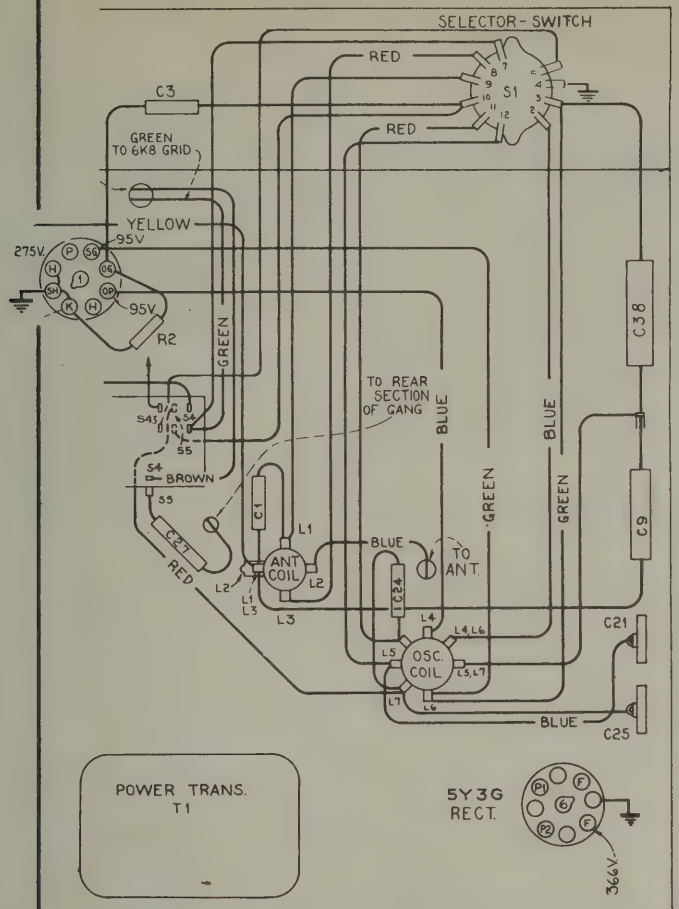
| | | |
|---|---|---|
| 1. | 6K8 | 12.0 MA. |
| 2. | 6K7 | 10.7 MA. |
| 3. | 6H6 | |
| 4. | 6F5 | 0.37 MA. |
| 5. | 6F6-G | 41.0 MA. |
| 6. | 6U5 | 1.0 MA. |

TOTAL RECTIFIED "B" CURRENT 70 MA

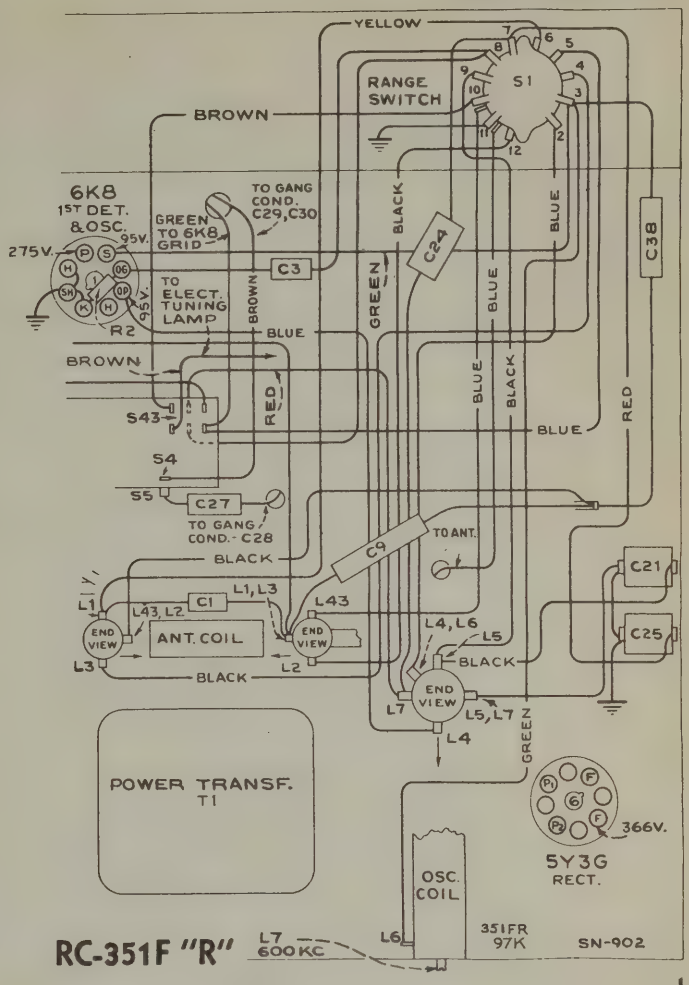
MODELS 96K AND 96T2, (RC351 "R") ARE IDENTICAL TO RC351F "R" EXCEPT FOR THE OMISSION OF 6U5 TUNING INDICATOR. SEE PRECEDING PAGE FOR OUTPUT TRANS. RES.

## Chassis No. RC-351F "R"

*Schematic Circuit Diagram*

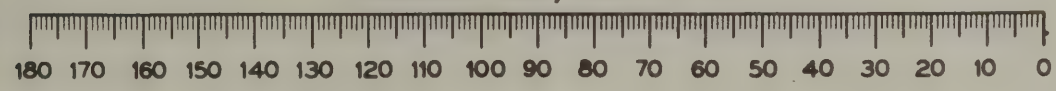


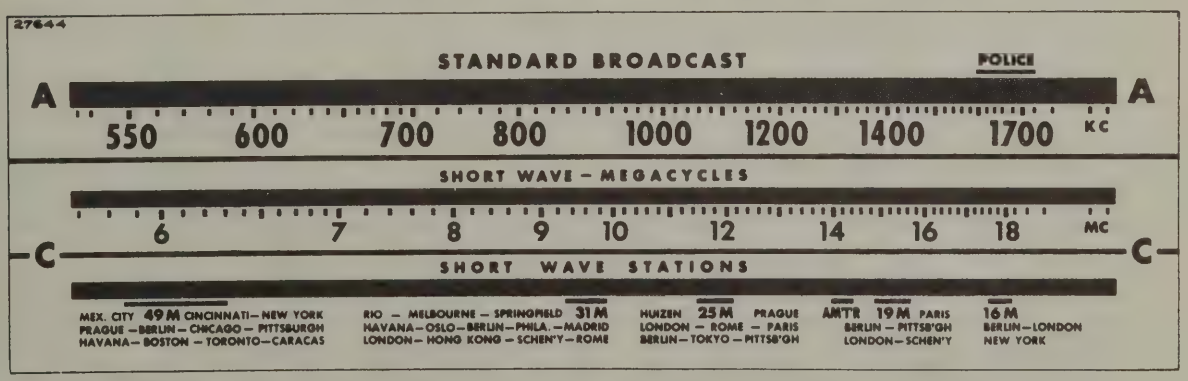

Chassis No. RC-351F and RC-351F "M"

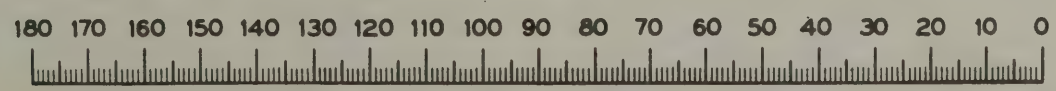


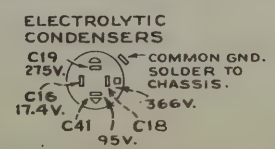

RC-351F "R"

## Calibration Scale, RC-351F "R"

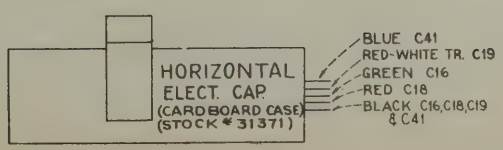




27644
STANDARD BROADCAST
POLICE
A
A
550 600 700 800 1000 1200 1400 1700 KC
SHORT WAVE – MEGACYCLES
C
C
6 7 8 9 10 12 14 16 18 MC
SHORT WAVE STATIONS
MEX. CITY 49M CINCINNATI – NEW YORK
PRAGUE – BERLIN – CHICAGO – PITTSBURGH
HAVANA – BOSTON – TORONTO – CARACAS
RIO – MELBOURNE – SPRINGFIELD 31M
HAVANA – OSLO – BERLIN – PHILA. – MADRID
LONDON – HONG KONG – SCHEN'Y – ROME
HUIZEN 25M PRAGUE
LONDON – ROME – PARIS
BERLIN – TOKYO – PITTSB'GH
AMTR 19M PARIS
BERLIN – PITTSB'GH
LONDON – SCHEN'Y
16M
BERLIN – LONDON
NEW YORK




VERTICAL ELECT. CAP. PACK WITH METAL CASE
(STOCK *32485)



# ALIGNMENT PROCEDURE

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

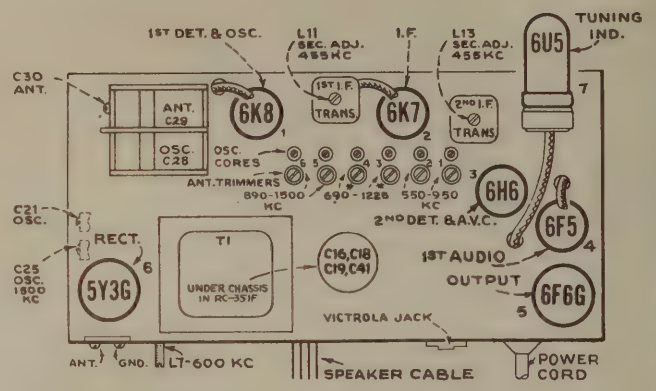
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.




* In RC-351F, push buttons 3 and 4 cover 680-1,180 kc.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

## RC-351F and RC-351F "M"

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L12 and L13 (2nd I-F Trans.) |
| 2 | 6K8 det. grid cap, in series with .01 mfd. | 455 kc | | L10 and L11 (1st I-F Trans.) |
| 3 | Antenna Terminal, in series with 400 ohms | 15.2 mc | 15.2 mc (33.5°) "C" band | C21* (osc.) C30** (ant.) |
| 4 | Antenna Terminal, in series with 200 mmf. | 1,500 kc | 1,500 kc (28°) "A" band | C25 (osc.) |
| 5 | Follow "Adjustments for Electric Tuning." | | | |

* Use minimum capacity peak if two peaks can be obtained.
** Rock gang slightly while adjusting C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 40.5° (14.29 mc), where a weaker signal should be received.
Note.—Oscillator tracks 455 kc above signal on both bands.

## RC-351F "R"

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L12 and L13 (2nd I-F Trans.) |
| 2 | 6K8 det. grid cap, in series with .01 mfd. | 455 kc | | L10 and L11 (1st I-F Trans.) |
| 3 | Antenna Terminal in series with 200 mmf. | 1,500 kc | 1,500 kc (27.4°) "A" band | C25 (osc.) C30 (ant.) |
| 4 | Antenna Terminal, in series with 200 mmf. | 600 kc | 600 kc (148°) "A" band | L7 (osc.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna Terminal, in series with 400 ohms | 18 mc | 18 mc (15°) "C" band | C21 (osc.)* |
| 7 | Follow "Adjustments for Electric Tuning." | | | |

* Rock gang slightly while peaking C21, and use minimum capacity peak if two peaks can be obtained on C21.
Note.—Oscillator tracks 455 kc above signal on both bands.

# ADJUSTMENTS FOR ELECTRIC TUNING

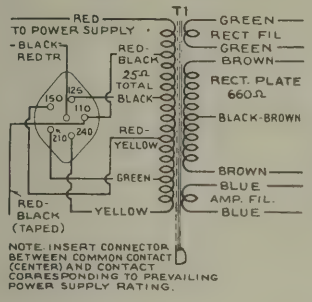
These models have eight push buttons. The left-hand button is a Victrola switch. The right-hand button connects the gang condenser for manual tuning. The other six buttons are for electric tuning of six different stations in the standard broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

The procedure is as follows:

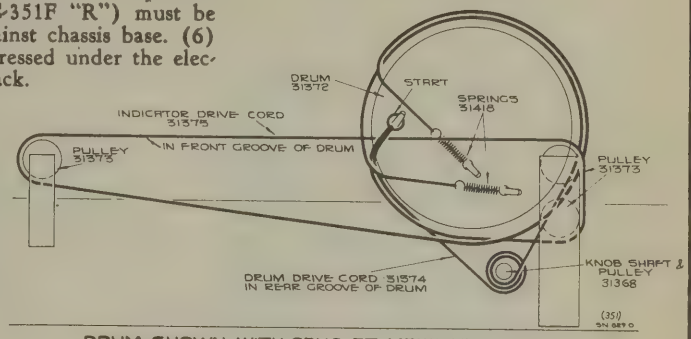
1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Use one or two feet of wire as an antenna to ensure sharp peaking.
3. Push in the dial-tuning button, and manually tune in the first station on the list.
4. Push in station button No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
5. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
6. Adjust for each of the remaining five stations in the same manner.
7. Make a final readjustment of the magnetite-cores.

**Precautionary Lead Dress.**—(1) Dress 110-volt leads away from audio wiring. (2) All leads in vicinity of antenna and oscillator coils must be dressed away from the coils. (3) Electric Tuning lamp leads from push-button switch must be dressed against front apron. (4) Keep speaker leads away from Victrola jack. (5) Lead from C19 in electrolytic (RC-351F "R") must be dressed around left-end of push-button switch, and against chassis base. (6) The leads across back of chassis in RC-351F must be dressed under the electrolytic capacitor to prevent approaching the Victrola jack.




Universal Power Transformer Connections. 110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.




DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

# REPLACEMENT PARTS 96K 96T2

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 14517 | Board—Antenna—ground terminal board |
| 31379 | Capacitor—Dual trimmer 2-10 Mmfd. and 3-30 Mmfd. (C21, C25) |
| 14079 | Capacitor—6.8 Mmfd. (C1) |
| 31387 | Capacitor—Antenna coil trimmer capacitor bank 20-470 Mmfd. (C31, C32, C33, C34, C35, C36) |
| 12948 | Capacitor—33 Mmfd. (C3) |
| 12720 | Capacitor—100 Mmfd. (C42) |
| 30904 | Capacitor—100 Mmfd. (C5, C6, C7, C8) |
| 12724 | Capacitor—120 Mmfd. (C12) |
| 13003 | Capacitor—180 Mmfd. (C37) |
| 31381 | Capacitor—620 Mmfd. (C24) |
| 31435 | Capacitor—750 Mmfd. (C26) |
| 31399 | Capacitor—4,700 Mmfd. (C27) |
| 5107 | Capacitor—.0025 Mfd. (C13) |
| 4838 | Capacitor—.005 Mfd. (C14, C17) |
| 14393 | Capacitor—.01 Mfd. (C10) |
| 11315 | Capacitor—.015 Mfd. (C11) |
| 4839 | Capacitor—0.1 Mfd. (C9, C38, C39) |
| 31371 | Capacitor—Comprising two 10 Mfd., one 20 Mfd., and one 5 Mfd. sections (C18, C19, C16, C41) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 31378 | Coil—Antenna coil—"A" and "C" bands (L1, L2, L3) |
| 31377 | Coil—Oscillator coil—"A" and "C" bands (L4, L5, L6, L7) |
| 31383 | Coil—Oscillator coil—"A" band (L41, L42) |
| 31384 | Coil—Oscillator coil—"A" band (L39, L40) |
| 31385 | Coil—Oscillator coil—"A" band (L37, L38) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 31375 | Cord—Indicator pointer drive cord |
| 31374 | Cord—Variable condenser drum drive cord |
| 30905 | Core—Adjustable core for I.F. transformer |
| 31386 | Core—Adjustable core and stud for oscillator coil Stock Nos. 31383, 31384, 31385 |
| 31372 | Drum—Variable condenser drive cord drum and calibrator dial |
| 31480 | Lamp—Dial lamp |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31373 | Pulley—Drive cord pulley |
| 14671 | Resistor—33 ohms, ½ watt (R11) |
| 31388 | Resistor—390 ohms, 1 watt (R12) |
| 31389 | Resistor—12,000 ohms, wire-wound, 5 watts (R14) |
| 30151 | Resistor—18,000 ohms, 1 watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 14560 | Resistor—100,000 ohms, ½ watt (R10) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Retaining spring for station selector knob shaft |
| 14887 | Retainer—Drive cord pulley retainer |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 31418 | Spring—Indicator, or drum drive cord tension spring |
| 31364 | Socket—Dial lamp socket |
| 14278 | Socket—Pickup socket |
| 31251 | Socket—Radiotron socket |
| 31367 | Switch—Range switch (S1) |
| 31370 | Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 30957 | Transformer—First I.F. transformer (L10, L11, C5, C6) |
| 30903 | Transformer—Second I.F. transformer (L12, L13, C7, C8) |
| 31445 | Transformer—Power transformer 100-120 volts, 25-60 cycle (T1) |
| 31380 | Transformer—Power transformer 100-120 volts, 50-60 cycle (T1) |
| 31446 | Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES** Model 96T2 (Speaker No. 84308-1) |
| 31443 | Cone—Speaker cone and voice coil (L14) |
| 31442 | Speaker—Complete |
| 31444 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES** Model 96K (Speaker No. RL70F-3) |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31302 | Plug—4-contact male plug |
| 31300 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31301 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31397 | Button—Station selector push-button |
| 31456 | Cover—8 protective covers for push-button markers |
| 31396 | Dial—Station selector dial scale |
| 31395 | Escutcheon—Station selector escutcheon less dial scale and push-buttons |
| 31392 | Indicator—Station selector indicator pointer |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31589 | Marker—Station call letter markers |
| 31457 | Marker—"Victrola" marker for push button |
| 31458 | Marker—"Dial Tuning" marker for push button |
| 31393 | Screen—Station selector dial color screen and light diffuser |
| 11377 | Screw—Chassis mounting screws, washers and lockwashers—Model 96K |
| 31390 | Screw—Chassis mounting screws, washers and lockwashers—Model 96T2 |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |
| 14270 | Spring—Retaining spring for knob Stock Nos. 31355 and 30773 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |
| 31394 | Stop—Indicator pointer slide stop |

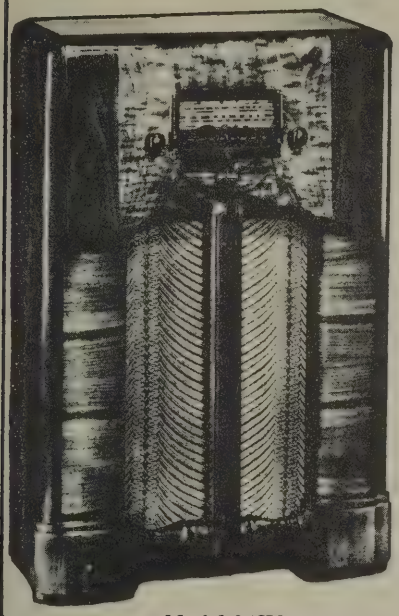
# REPLACEMENT PARTS 97K

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

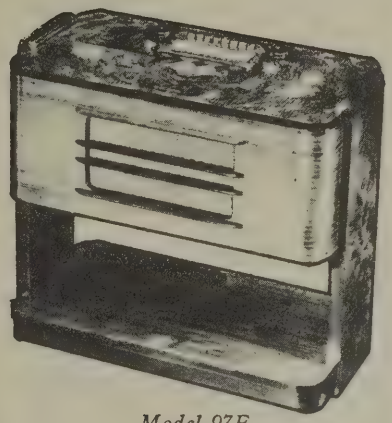
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-351F, RC-351F "M," and RC-351F "R")** |
| 30752 | Bracket—Magic Eye mounting bracket |
| 14517 | Board—Antenna—ground terminal board |
| 12110 | Cap—Tube shield cap |
| 31379 | Capacitor—Dual trimmer 2-10 mmfd. and 3-30 mmfd. (C21, C25) |
| 14079 | Capacitor—6.8 mmfd. (C1) use in RC-351F and RC-351F "M" only |
| 12896 | Capacitor—15 mmfd. (C1) used in RC-351F "R" only |
| 31387 | Capacitor—Antenna coil trimmer capacitor bank, (C31, C32, C33, C34, C35, and C36) used in RC-351F only |
| 32486 | Capacitor—Antenna coil trimmer capacitor bank, (C31, C32, C33, C34, C35, and C36) used in RC-351F "M" and RC-351F "R" only |
| 12948 | Capacitor—33 mmfd. (C3) |
| 12720 | Capacitor—100 mmfd. (C42) |
| 30904 | Capacitor—100 mmfd. (C5, C6, C7, C8) used in RC-351F and RC-351F "M" only |
| 14262 | Capacitor—109 mmfd. (C5 and C6) used in RC-351F "R" only |
| 12404 | Capacitor—120 mmfd. (C7 and C8) used in RC-351F "R" only |
| 12724 | Capacitor—120 mmfd. (C12) |
| 13003 | Capacitor—180 mmfd. (C37) mounted under chassis in RC-351F and RC-351F "M" only |
| 14712 | Capacitor—180 mmfd. (C37) mounted in 2nd I-F transformer in RC-351F "R" only |
| 32492 | Capacitor—530 mmfd. (C24) in RC-351F "R" only |
| 31381 | Capacitor—620 mmfd. (C24) in RC-351F and RC-351F "M" only |
| 31435 | Capacitor—750 mmfd. (C26) |
| 31399 | Capacitor—4,700 mmfd. (C27) |
| 5107 | Capacitor—.0025 mfd. (C13) |
| 4838 | Capacitor—.005 mfd. (C14, C17) |
| 14393 | Capacitor—.01 mfd. (C10) |
| 11315 | Capacitor—.015 mfd. (C11) |
| 4839 | Capacitor—0.1 mfd. (C9, C38, C39) |
| 31371 | Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) (cardboard case type, mounted horizontally and used in RC-351F only) |
| 32485 | Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) (metal case type, mounted vertically and used in RC-351F "R" and RC-351F "M" only) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 31378 | Coil—Antenna coil, "A" and "C" bands (L1, L2, L3) mounted vertically and used in RC-351F and RC-351F "M" only |
| 32488 | Coil—Antenna coil, "A" and "C" bands (L1, L2, L3, L43) mounted horizontally and used in RC-351F "R" only |
| 31377 | Coil—Oscillator coil, "A" and "C" bands (L4, L5, L6, L7) mounted vertically (no magnetite core) and used in RC-351F and RC-351F "M" only |
| 32489 | Coil—Oscillator coil, "A" and "C" bands (L4, L5, L6, L7) mounted horizontally (with magnetite core) and used in RC-351F "R" only |
| 31383 | Coil—Push-button oscillator coil (L41, L42) |
| 31384 | Coil—Push-button oscillator coil (L39, L40) used in RC-351F only |
| 32487 | Coil—Push-button oscillator coil (L39, L40) used in RC-351F "M" and "R" |
| 31385 | Coil—Push-button oscillator coil (L37, L38) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 31375 | Cord—Indicator pointer drive cord |
| 31374 | Cord—Variable condenser drum drive cord |
| 30905 | Core—Adjustable core for i-f transformer |
| 31386 | Core—Adjustable core and stud for oscillator coils Stock Nos. 31383, 31384, 31385, 32487 |
| 12800 | Core—Adjustable core and stud for oscillator coil Stock No. 32489 |
| 31372 | Drum—Variable condenser drive cord drum and calibrator dial |
| 31480 | Lamp—Dial lamp |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31373 | Pulley—Drive cord pulley |
| 14671 | Resistor—33 ohms, ½ watt (R11) |
| 31388 | Resistor—390 ohms, 1 watt (R12) |
| 31389 | Resistor—12,000 ohms, wire-wound, 5 watts (R14) |
| 30151 | Resistor—18,000 ohms, 1 watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R7) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 14560 | Resistor—100,000 ohms, ½ watt (R10) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R5) used in RC-351F "R" |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) used in RC-351F and RC-351F "M" |
| 12199 | Resistor—270,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9) |
| 12013 | Resistor—1 meg., 1/10 watt (R20) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Retaining spring for station selector knob shaft |
| 14807 | Retainer—Drive cord pulley retainer |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 31418 | Spring—Indicator, or drum drive cord tension spring |
| 31364 | Socket—Dial lamp socket |
| 31365 | Socket—Electric tuning indicator lamp socket (insulated) |
| 13871 | Socket—Magic Eye socket |
| 14278 | Socket—Pickup socket |
| 31251 | Socket—Tube socket |
| 31367 | Switch—Range switch (S1) used in RC-351F and RC-351F "M" only |
| 32490 | Switch—Range switch (S1) used in RC-351F "R" only |
| 32498 | Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 30902 | Transformer—1st I-F transformer (L10, L11, C5, C6) used in RC-351F and RC-351F "M" only |
| 14376 | Transformer—1st I-F transformer (L10, L11, C5, C6) used in RC-351F "R" only |
| 30903 | Transformer—2nd I-F transformer (L12, L13, C7, C8) used in RC-351F and RC-351F "M" only |
| 14283 | Transformer—2nd I-F transformer (L12, L13, C7, C8, C37, R4, R5) used in RC-351F "R" only |
| 31445 | Transformer—Power transformer 100-120 volts, 25-60 cycle (T1) |
| 31380 | Transformer—Power transformer 100-120 volts, 50-60 cycle (T1) |
| 31446 | Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES (RL-70-F3)** |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L12) |
| 11469 | Coil—Hum neutralizing coil (L14) |
| 31275 | Cone—Speaker cone and voice coil (L13) |
| 31302 | Plug—4-contact male plug |
| 31300 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31301 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 12038 | Band—Rubber band for "Magic Eye" |
| 31397 | Button—Station selector push button |
| 31456 | Cover—8 protective covers for push button markers |
| 31396 | Dial—Dial scale (glass) used in RC-351F and RC-351F "M" only |
| 32356 | Dial—Dial scale (glass) used in RC-351F "R" only |
| 31395 | Escutcheon—Station selector escutcheon—less dial scale and push buttons |
| 31407 | Escutcheon—"Magic Eye" or "Electric Tuning" indicator escutcheon |
| 31392 | Indicator—Station selector indicator pointer |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31589 | Marker—Station call letter markers for push buttons |
| 31458 | Marker—"Dial Tuning" marker for push button |
| 31457 | Marker—"Victrola" marker for push button |
| 31393 | Screen—Station selector dial color screen and light diffuser |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |
| 14270 | Spring—Retaining spring for knob Stock Nos. 31355 and 30773 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |
| 31394 | Stop—Indicator pointer slide stop |

# MODELS 96K2, 96T3, 97E, 97KG and 97T

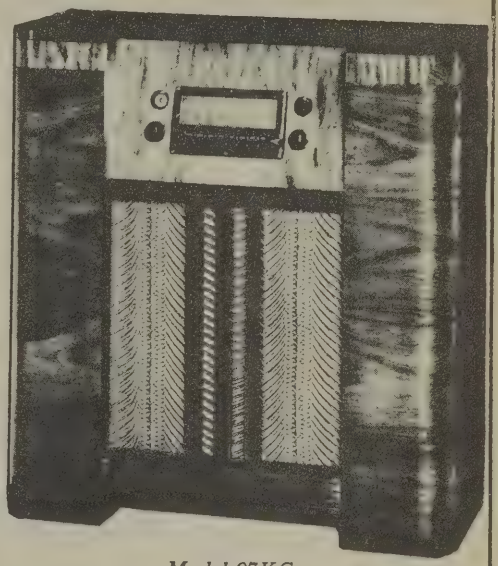
## Six- and Seven-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receivers



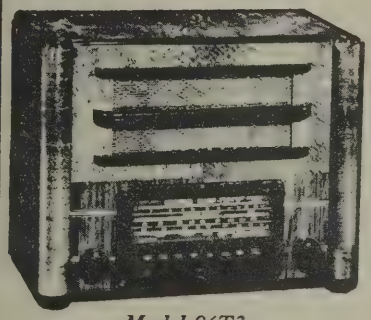
*Model 96K2*



*Model 97E*



*Model 97KG*



*Model 96T3*

**Model 96K2** is a six-tube console with 12-inch speaker.

**Model 96T3** is a six-tube table model, with 6-inch speaker.

**Model 97E** is a seven-tube end-table model, with 8-inch speaker.

**Model 97KG** is a seven-tube console-grand, with 12-inch speaker.

**Model 97T** is a seven-tube table model, with 6-inch speaker.

*Model 97T*

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540 1,720 kc |
| "Medium Wave" (B) | 2.3-7 mc |
| "Short Wave" (C) | 7-22 mc |

R-F ALIGNMENT FREQUENCIES

| | |
|---|---|
| "Short Wave" (C) | 20 mc (osc., ant.) |
| "Medium Wave" (B) | 6.1 mc (osc.) |
| "Standard Broadcast" (A) | 1,500 kc (osc.) |

Six Electric Tuning Positions ..... 550-1,500 kc
2 stations between approximately 550- 950 kc
2 stations between approximately 680-1,180 kc
2 stations between approximately 890-1,500 kc

RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6K8 | First-Detector—Oscillator |
| (2) RCA-6K7 | Intermediate-Frequency Amplifier |
| (3) RCA-6H6 | Second-Detector and A.V.C. |
| (4) RCA-6F5 | Audio Voltage Amplifier |
| (5) RCA-6F6 | Audio Power Amplifier |
| (6) RCA-5W4 | Full-Wave Rectifier |
| (7) RCA-6U5 (Models 97E, 97KG and 97T) | Tuning Tube |

Pilot Lamps (2 on Models 96K2, 96T3) (3 on Models 97E, 97KG and 97T) ..... Mazda 47, 6.3 volts, .15 amp.

POWER SUPPLY RATING

| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 80 watts |
| Rating B | 105-125 volts, 25-60 cycles, 80 watts |
| Rating C | 100-130/140-160/195-250 volts, 40-60 cycles, 80 watts |

| POWER OUTPUT | 96T3, 97T | 97E, 96K2, 97KG |
|---|---|---|
| Undistorted | 2.0 watts | 2.5 watts |
| Maximum | 4.0 watts | 4.5 watts |

LOUDSPEAKER

Type ..... Electrodynamic

Voice-coil impedance ..... 84308-1 2.6 ohms; RL-70F-3 2.25 ohms; RL-63H-3 2.25 ohms ..... at 400 cycles

# MODELS 96K2, 96T3, 97E, 97KG, 97T, 97Y, 98X, 98EY, 98YG, U-119, U-122E, U-124, U-125

**Changes in 2nd and 3rd Production:**

The 2nd and 3rd productions are identified by the letters "M" or "R" respectively after the RC number stamping.

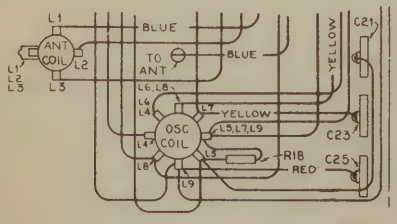
For service data applying to circuit, alignment, chassis layout, R-F and I-F coils, and electrolytic capacitors, for the 3rd production run (chassis with "R" following RC number stamping) of Models 96K2, 96T3, 97E, 97KG, 97T, U-119, U-122E, U-124, and U-125, refer to the Service Note for Model 96E2. This same data applies to the AC-DC Models 97Y, 98X, 98EY, and 98YG, except that the latter models have a common negative line insulated from chassis.

| | 1ST PRODUCTION | 2ND PRODUCTION (Chassis Stamped "M") | 3RD PRODUCTION (Chassis Stamped "R") |
|---|---|---|---|
| **PUSH-BUTTON FREQUENCY RANGES** | | | |
| Button No. 1 (left), and No. 2 | 550- 950 kc | 550- 950 kc | 550- 950 kc |
| Button No. 3 and 4 | 680-1,180 kc | 690-1,225 kc | 690-1,225 kc |
| Button No. 5 and 6 | 890-1,500 kc | 890-1,500 kc | 890-1,500 kc |
| **ANTENNA TRIMMER BANK CAPACITANCE** | | | |
| C31 and C32 | 20-170 mmfd. | 20-170 mmfd. | 20-170 mmfd. |
| C33 and C34 | 70-310 mmfd. | 50-310 mmfd. | 50-310 mmfd. |
| C35 and C36 | 120-470 mmfd. | 120-470 mmfd. | 120-470 mmfd. |
| **TUBES** | | | |
| Output tube (96K2, 96T3, 97E, 97KG, 7T, U-119, U-122E, U-124) | 6F6 | 6F6-G | 6F6-G |
| Rectifier tube (96K2, 96T3, 97KG, 97T, U-119) | 5W4 | 5Y3-G | 5Y3-G |
| | Stock No. | Stock No. | Stock No. |
| Cap—Tube shield cap for 6F5 (96K2, 96T3 97E, 97KG, 97T, U-119, U-122E, U-124) | .... | 12110 | 12110 |
| Capacitor—6.8 mmfd. (C1) | 14079 | 14079 | .... |
| Capacitor—18 mmfd. (C1) | .... | .... | 12722 |
| Capacitor—Antenna trimmer capacitor bank (C31, C32, C33, C34, C35, C36) | 31387 | 32486 | 32486 |
| Capacitor—100 mmfd. (C5, C6, C7, C8) | 30904 | 30904 | .... |
| Capacitor—109 mmfd. (C5, C6) | .... | .... | 14262 |
| Capacitor—120 mmfd. (C7, C8) | .... | .... | 12404 |
| Capacitor—180 mmfd. (C37) (mounted under chassis) | 13003 | 13003 | .... |
| Capacitor—180 mmfd. (C37) (mounted in 2nd I-F transformer) | .... | .... | 14712 |
| Capacitor—620 mmfd. (C24) | 31381 | 31381 | .... |
| Capacitor—530 mmfd. (C24) | .... | .... | 32492 |
| Capacitor*—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), cardboard case, mounted horizontally | 31371* | .... | .... |
| Capacitor*—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41), metal case, mounted vertically | .... | 32485* | 32485* |
| Coil—Antenna coil, A, B, and C bands (L1, L2, L3) mounted vertically | 31402 | 31402 | .... |
| Coil—Antenna coil, A, B, and C bands (L1, L2, L3, L43) mounted horizontally | .... | .... | 32493 |
| Coil—Oscillator coil, A, B, and C bands (L4, L5, L6, L7, L8, L9) mounted vertically, no magnetite core | 31401 | 31401 | .... |
| Coil—Oscillator coil, A, B, and C bands (L4, L5, L6, L7, L8, L9) mounted horizontally, with magnetite core | .... | .... | 31951 |
| Coil—Push-button oscillator coil (L37 or L38) | 31385 | 31385 | 31385 |
| Coil—Push-button oscillator coil (L39 or L40) | 31384 | 32487 | 32487 |
| Coil—Push-button oscillator coil (L41 or L42) | 31383 | 31383 | 31383 |
| Core—Adjustable core and stud for oscillator coil, Stock No. 31951 | .... | .... | 12800 |
| Resistor—27,000 ohms, ½ watt (R18) | 12738 | 12738 | .... |
| Resistor—220,000 ohms, ½ watt (R5) | 12264 | 12264 | .... |
| Resistor—220,000 ohms, 1/10 watt (R5) | .... | .... | 11398 |
| Resistor—470,000 ohms, ½ watt (R1) | 12285 | 12285 | .... |
| Resistor—1.0 megohm, ½ watt (R1) | .... | .... | 13730 |
| Switch—Range switch (S1, S2) for A-C models | 31398 | 31398 | 32491 |
| Switch—Range switch (S1, S2) for AC-DC models | 31398 | 31398 | 32496 |
| Switch—Push-button switch for U-125 | 31370** | 31370** | 32498** |
| Transformer—1st I-F transformer (L10, L11, C5, C6) | 30957 | 30957 | 14376 |
| Transformer—2nd I-F transformer (L12, L13, C7, C8) | 30903 | 30903 | .... |
| Transformer—2nd I-F transformer (L12, L13, C7, C8, C37, R4, R5) | .... | .... | 14283 |
| Dial—Station selector dial scale for Models 96K2, 96T3, 97E, 97KG, 97T, 97Y, 98X, 98EY, 98YG, U-119, U-122E | 31406 | 31406 | 32494 |
| Dial—Dial scale for Models U-124, U-125 | 31591 | 31591 | 32495 |

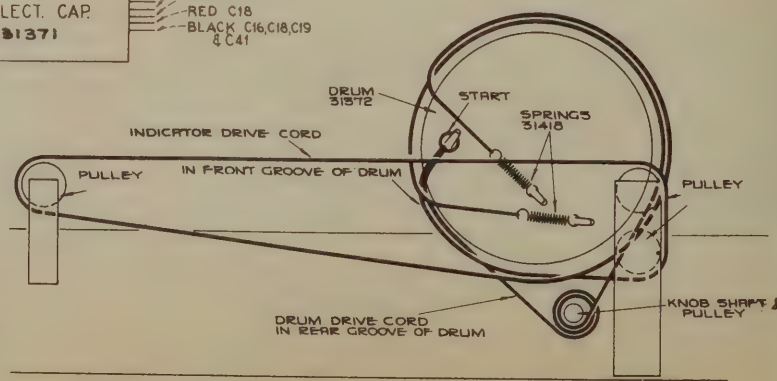
* In all types of Model U-125, the electrolytic capacitor is Stock No. 32142. In all types of Models 97Y, 98X, 98EY, 98YG, the electrolytic capacitor is Stock No. 31576.

** Stock No. 32498 supersedes No. 31370 in U-125.

**FOR PARTS NOT LISTED ABOVE, REFER TO THE ORIGINAL SERVICE NOTE FOR THE PARTICULAR MODEL.**



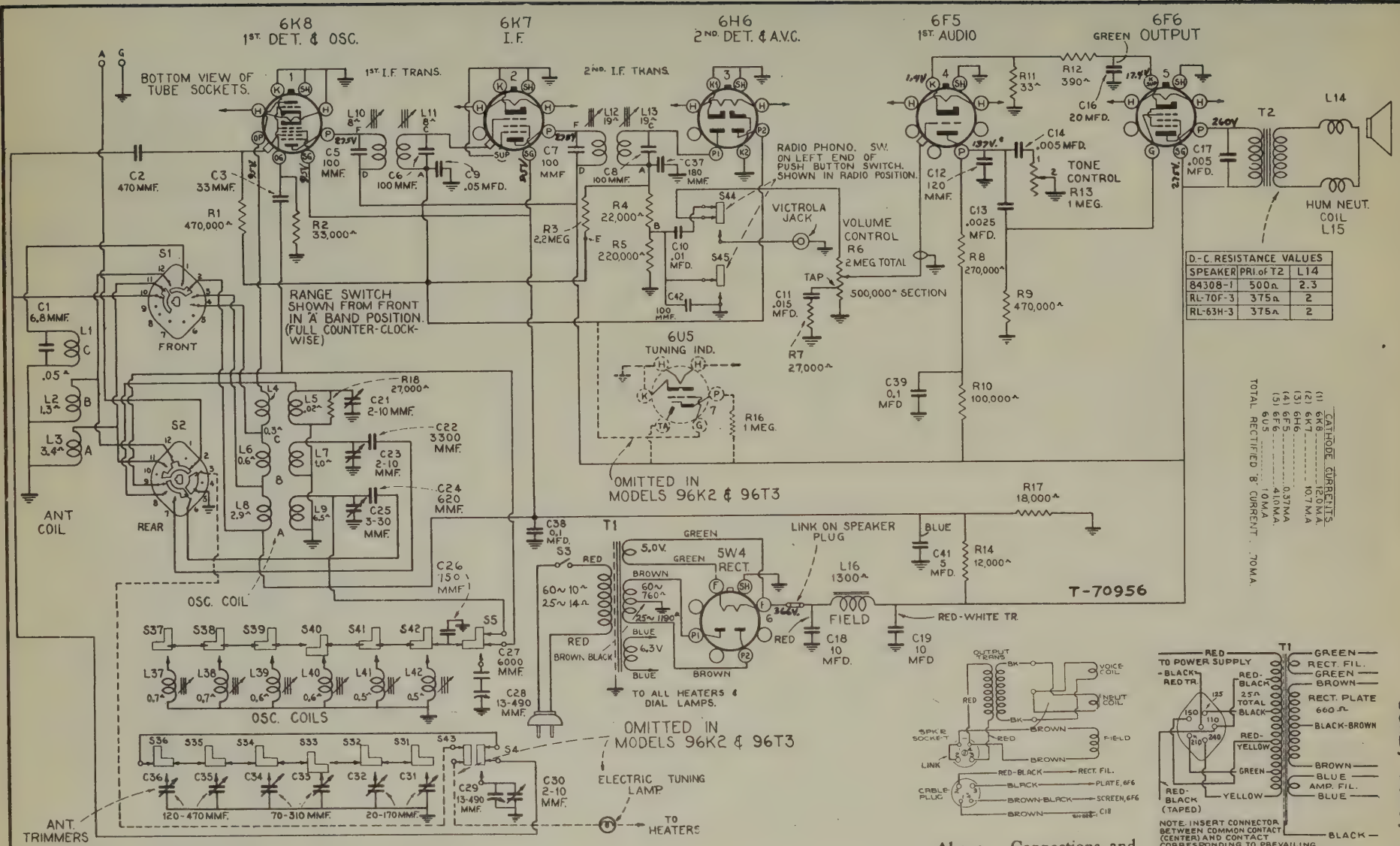

COIL CONNECTIONS
1ST and 2ND PROD.




DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

REFER TO MODEL 96E2 (PAGE 614C) FOR ELECTRIC TUNING ADJUSTMENT AND ALIGNMENT, COIL, CONNECTIONS ELECTROLYTIC CAPACITOR AND CHASSIS LAYOUT OF 3RD PROD.

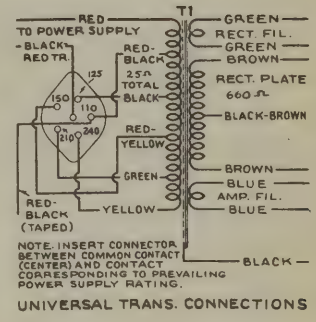



| D.-C. RESISTANCE VALUES | | |
|---|---|---|
| SPEAKER | PRI. of T2 | L14 |
| 84308-1 | 500Ω | 2.3 |
| RL-70F-3 | 375Ω | 2 |
| RL-63H-3 | 375Ω | 2 |

CATHODE CURRENTS.
(1) 6K8 ..... 12.0 MA.
(2) 6K7 ..... 10.7 MA.
(3) 6H6 .....
(4) 6F5 ..... 0.37 MA.
(5) 6F6 ..... 41.0 MA.
6U5 ..... 1.0 MA.
TOTAL RECTIFIED 'B' CURRENT ..... 70 MA.




**Above** — Connections and Colors of Loudspeaker and Cable.




**Above** — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

**Precautionary Lead Dress.—**

1. Dress power-switch leads against left apron to prevent hum pickup.
2. Dress R1 away from front of chassis.
3. Electric-tuning lamp leads must be dressed in front of range switch.
4. Dress lead from L5 to range switch away from other leads.
5. Dress leads away from antenna coil.
6. Dress other parts and leads away from R14, as it becomes heated.
7. Leads across back of chassis should be dressed under electrolytic to prevent approaching Victrola jack.

96K2, 96T3, 97E, 97KG, 97T

# ALIGNMENT PROCEDURE

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

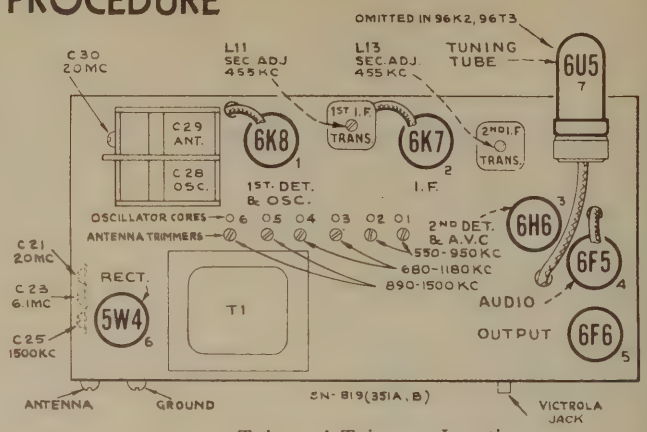
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.




*—Tube and Trimmer Locations*

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

After completion of alignment, seal the i-f core-adjusting screws with household cement.

For additional details, refer to booklet "RCA Victor Receiver Alignment."

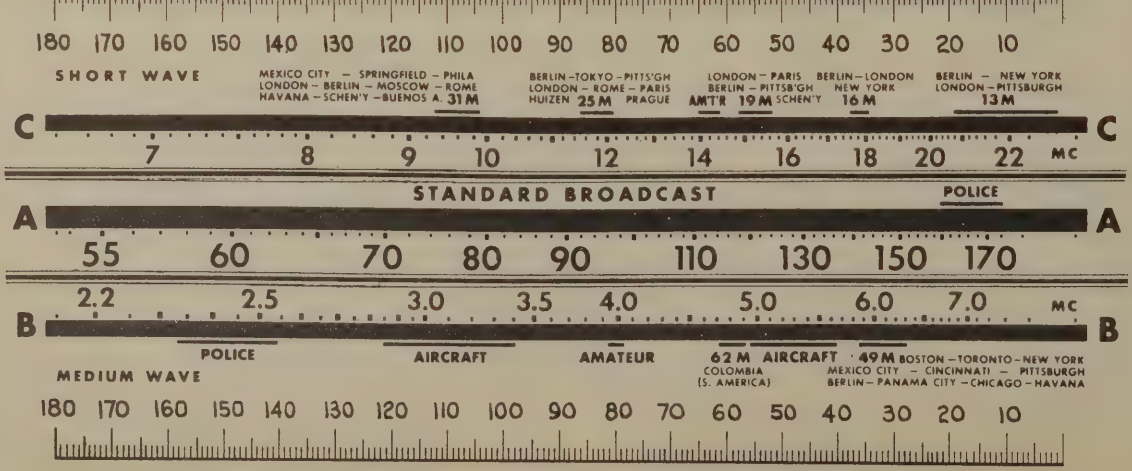
| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L12 and L13 (2nd I-F Trans.) |
| 2 | 6K8 det. grid cap, in series with .01 mfd. | 455 kc | | L10 and L11 (1st I-F Trans.) |
| 3 | Antenna Terminal, in series with 400 ohms | 20 mc | 20 mc (23°) "C" band | C21* (osc.) C30** (ant.) |
| 4 | Antenna Terminal, in series with 400 ohms | 6.1 mc | 6.1 mc (31°) "B" band | C23 (osc.)† |
| 5 | Antenna Terminal, in series with 200 mmf. | 1,500 kc | 1,500 kc (28½°) "A" band | C25 (osc.) |
| 6 | Follow "Adjustments for Electric Tuning" | | | |

* Use **minimum** capacity peak if two peaks can be obtained.

** Rock gang slightly and use **maximum** capacity peak if two peaks can be obtained with C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 28° (19.09 mc), where a weaker signal should be received.

† Use **minimum** capacity peak if two peaks can be obtained. Check to determine that C23 has been adjusted to the correct peak by turning to approximately 49° (5.19 mc), at which point a weaker signal should be received.

**Note:** Oscillator tracks 455 kc above signal on all bands.


180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10
SHORT WAVE
MEXICO CITY – SPRINGFIELD – PHILA
LONDON – BERLIN – MOSCOW – ROME
HAVANA – SCHEN'Y – BUENOS A. 31M
BERLIN–TOKYO–PITTS'GH
LONDON – ROME – PARIS
HUIZEN 25M PRAGUE
LONDON – PARIS BERLIN – LONDON
BERLIN – PITTSB'GH NEW YORK
AM'T'R 19M SCHEN'Y 16M
BERLIN – NEW YORK
LONDON – PITTSBURGH
13M
C
7 8 9 10 12 14 16 18 20 22 MC
STANDARD BROADCAST
POLICE
A
55 60 70 80 90 110 130 150 170
2.2 2.5 3.0 3.5 4.0 5.0 6.0 7.0 MC
B
POLICE
AIRCRAFT
AMATEUR
62M AIRCRAFT
COLOMBIA (S. AMERICA)
49M BOSTON – TORONTO – NEW YORK
MEXICO CITY – CINCINNATI – PITTSBURGH
BERLIN – PANAMA CITY – CHICAGO – HAVANA
MEDIUM WAVE
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10

*—Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

REFER TO MODEL 96E2 FOR 3RD PROD. ALIGNMENT (PAGE 614C)

## MODELS 96E, 96T2, 96T3, 97T

**Speaker Stamped 84308-4:**

The following replacement parts apply to speaker stamped 84308-4:

Stock No.

32918 Cone—Cone and voice coil
32919 Coil—Field coil
32920 Transformer—Output transformer
31302 Plug—4-contact male plug

Voice coil impedance 2.2 ohms at 400 cycles; field d.c. resistance 1,290 ohms.

## MODELS 96T3, 97T

ADDITIONAL REPLACEMENT PART

Stock No.

14616 Coil - Field coil for speaker stamped 84308-1

## 96K2, 96T3, 97E, 97KG, 97T

## MODEL 96T3

**Speaker Stamped 72870-1:**

The following replacement parts apply to speaker stamped 72870-1:

Stock No.

13677 Cone—Cone and voice coil
13822 Coil—Field coil
13678 Transformer—Output transformer

For complete speaker, order Stock No. 31442 (84308-1) listed in Service Data.

# REPLACEMENT PARTS

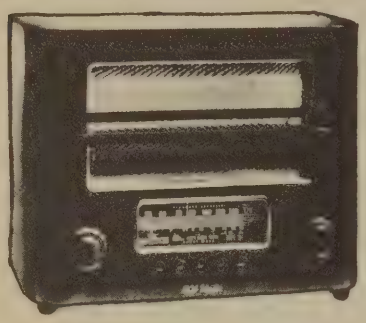
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 14517 | Board—Antenna ground terminal board |
| 30752 | Bracket—Magic Eye bracket and holder — Models 97T, 97KG, and 97E only |
| 31400 | Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25) |
| 14079 | Capacitor—6.8 mmfd. (C1) |
| 31387 | Capacitor—Antenna trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36) |
| 12948 | Capacitor—33 mmfd. (C3) |
| 12720 | Capacitor—100 mmfd. (C42) |
| 30904 | Capacitor—100 mmfd. (C5, C6, C7, C8) |
| 12724 | Capacitor—120 mmfd. (C12) |
| 13003 | Capacitor—180 mmfd. (C37) |
| 30433 | Capacitor—470 mmfd. (C2) |
| 31381 | Capacitor—620 mmfd. (C24) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 31403 | Capacitor—3,300 mmfd. (C22) |
| 31405 | Capacitor—6,000 mmfd. (C27) |
| 5107 | Capacitor—.0025 mfd. (C13) |
| 4838 | Capacitor—.005 mfd. (C14, C17) |
| 14393 | Capacitor—.01 mfd. (C10) |
| 4839 | Capacitor—0.1 mfd. (C38, C39) |
| 11315 | Capacitor—.015 mfd. (C11) |
| 4886 | Capacitor—.05 mfd. (C9) |
| 31371 | Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 31402 | Coil—Antenna coil—A, B, and C bands (L1, L2, L3) |
| 31401 | Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9) |
| 31383 | Coil—Oscillator coil—A band (L41, L42) |
| 31384 | Coil—Oscillator coil—A band (L39, L40) |
| 31385 | Coil—Oscillator coil—A band (L37, L38) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 31375 | Cord—Indicator pointer drive cord |
| 31374 | Cord—Variable condenser drum drive cord |
| 30905 | Core—Adjustable core for i-f transformer |
| 31386 | Core—Adjustable core and stud for oscillator coil Stock Nos. 31383, 31384, and 31385 |
| 31372 | Drum—Variable condenser drive cord drum and calibrator dial |
| 31480 | Lamp—Dial lamp |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31373 | Pulley—Indicator drive cord pulley |
| 14671 | Resistor—33 ohms, ½ watt (R11) |
| 31388 | Resistor—390 ohms, 1 watt (R12) |
| 31389 | Resistor—12,000 ohms, wire wound, 5 watts (R14) |
| 30151 | Resistor—18,000 ohms, 1 watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R7, R18) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 14560 | Resistor—100,000 ohms, ½ watt (R10) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R1, R9) |
| 12013 | Resistor—1 meg., 1/10 watt (R16)—Models 97T, 97KG, and 97E |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Retaining spring for station selector knob shaft |
| 14887 | Retainer—Drive cord pulley retainer |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 31418 | Spring—Indicator, or drum drive cord tension spring |
| 31364 | Socket—Dial lamp socket |
| 31365 | Socket—"Electric Tuning" indicator lamp insulated socket |
| 13871 | Socket—Magic Eye socket—Models 97T, 97KG, and 97E only |
| 14278 | Socket—Pickup socket |
| 31251 | Socket—Radiotron socket |
| 31398 | Switch—Range switch (S1, S2) |
| 31370 | Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 30957 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 30903 | Transformer—Second i-f transformer (L12, L13, C7, C8) |
| 31445 | Transformer—Power transformer 100-120 volts, 25-60 cycle (T1) |
| 31380 | Transformer—Power transformer 100-120 volts, 50-60 cycle (T1) |
| 31446 | Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1) |
| | **SPEAKER ASSEMBLIES** Models 96T3 and 97T (Speaker 84308-1) |
| 31443 | Cone—Speaker cone and voice coil (L14) |
| 31442 | Speaker—Complete |
| 31444 | Transformer—Output transformer (T2) |
| | **SPEAKER ASSEMBLIES** Models 96K2 and 97KG (Speaker RL-70F-3) |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31302 | Plug—4-contact male plug |
| 31300 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31301 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **SPEAKER ASSEMBLIES** Model 97E (Speaker RL-63H-3) |
| 14356 | Board—3-contact speaker terminal board |
| 13866 | Cap—Cone center dust cap |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L15) |
| 31310 | Cone—Speaker cone and voice coil (L14) |
| 31826 | Plug—4-contact male plug for speaker |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31824 | Speaker—Complete |
| 14355 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31397 | Button—Station selector push button |
| 31456 | Cover—8 protective covers for push button markers |
| 31406 | Dial—Station selector dial scale |
| 31543 | Disc—"Electric Tuning" indicator disc—Models 97T, 97KG, and 97E only |
| 31395 | Escutcheon—Station selector escutcheon — less dial scale and push buttons |
| 31407 | Escutcheon—"Magic Eye and Electric Tuning" indicator escutcheon—Models 97T, 97KG, and 97E only |
| 31392 | Indicator—Station selector indicator pointer |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31589 | Marker—Station call letter markers for push buttons |
| 31458 | Marker—"Dial Tuning" marker for push button |
| 31457 | Marker—"Victrola" marker for push button |
| 31393 | Screen—Station selector dial color screen and light diffuser |
| 11377 | Screw—Chassis mounting screws, washers, and lockwashers—Models 96K2, and 97KG only (3 required) |
| 31390 | Screw—Chassis mounting screws, washers, and lockwashers—Models 96T3, and 97T only (sufficient for 1 chassis) |
| 11210 | Screw—Chassis mounting screws, washers, and lockwashers—Model 97E only (3 required) |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |
| 14270 | Spring—Retaining spring for knob Stock Nos. 31355 and 30773 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |
| 31394 | Stop—Indicator pointer slide stop |

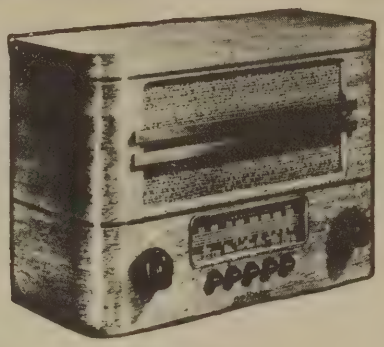
# Models 96T4, 96T5 and 96T6

CHASSIS No. RC-399. RC-399A

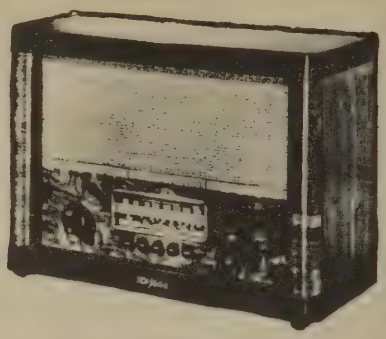
## Six-Tube, Electric-Tuning, Two-Band, A-C—D-C, Superheterodyne Receivers



*Model 96T4*



*Model 96T5*



*Model 96T6*

## Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)..... 540-1,720 kc
"Short Wave" (C)..... 5.8-18.0 mc
Intermediate Frequency..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SA7..... First Detector—Oscillator
(2) RCA-6K7..... I-F Amplifier
(3) RCA-6SQ7... Second Detector, A.V.C., and A-F Amp.
(4) RCA-25L6..... Power Output
(5) RCA-25Z6G..... Half-Wave Rectifier
(6) RCA-BK49B..... Ballast Tube
Pilot Lamp..... Mazda 47, 6.3 volts, 0.15 amp.

POWER OUTPUT RATING

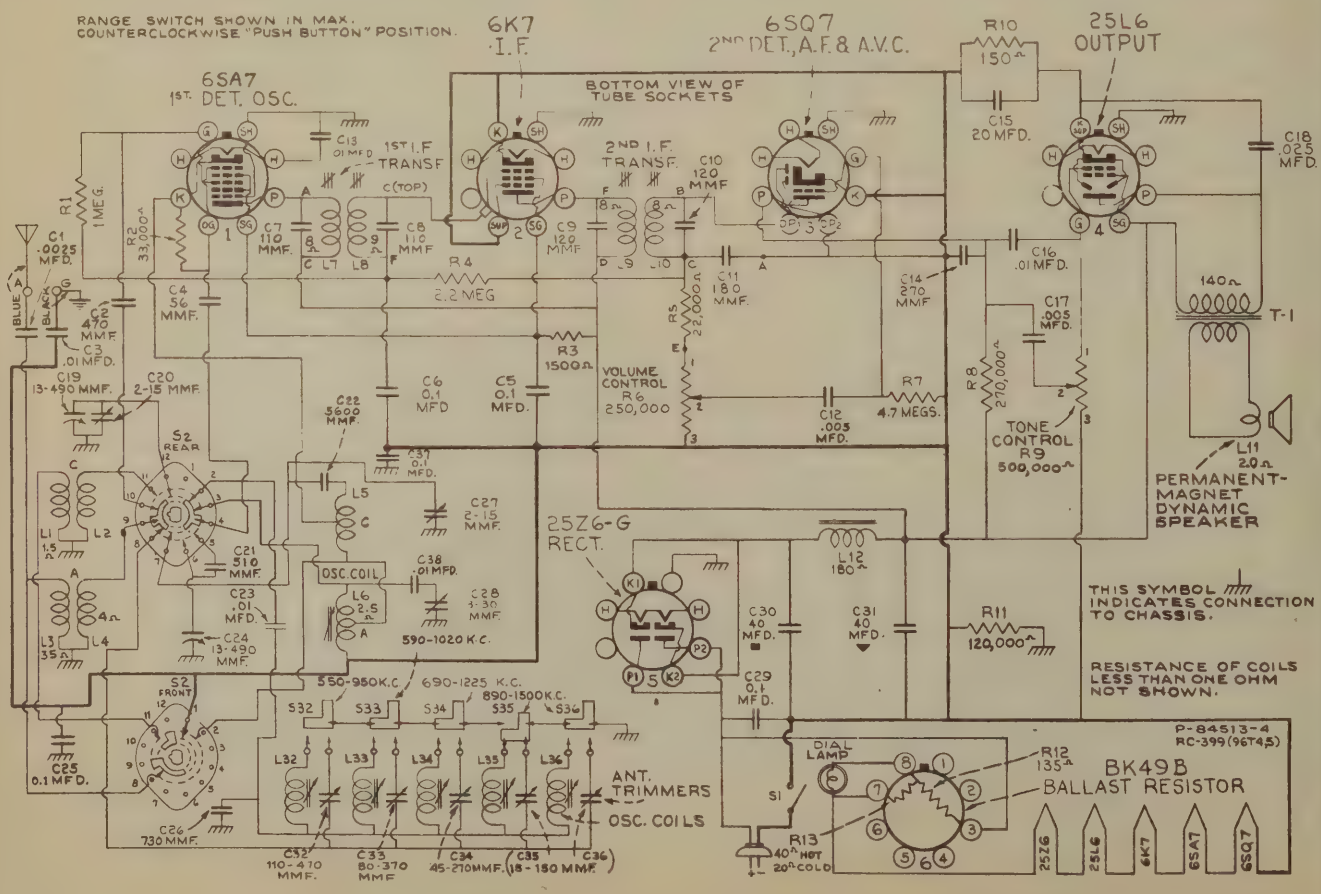
Undistorted..... 1.5 watts
Maximum..... 2.5 watts

LOUDSPEAKER

Type..... Permanent Magnet Dynamic
Diameter..... 96T4, 5: 5 inch—96T6: 6 inch
V.C. Impedance..... 2 ohms at 400 cycles

POWER SUPPLY RATINGS

A-C Rating..... 105-125 volts, 25-60 cycles, 60 watts
D-C Rating..... 105-125 volts, direct current, 60 watts



# Alignment Procedure

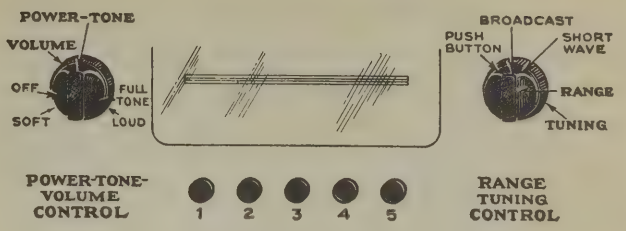
**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the black lead and keep the output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, and 15.2 mc. have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

**Dial Indicator Adjustment.**—With the gang condenser in full mesh, the indicator should point to the extreme left mark on the dial scale.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



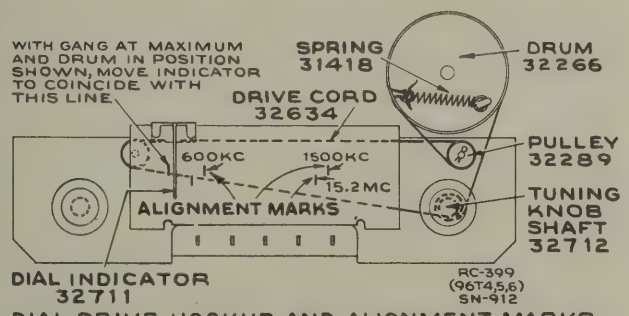

*Location of Controls*

**Power Supply Polarity.**—On d-c operation, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. On a-c operation, a similar reversal of the plug may reduce hum.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" band, Quiet Point between 550-750 kc | L9 and L10 (2nd I-F Trans.) |
| 2 | Tuning condenser Stator (osc.) in series with .01 mfd. | 455 kc | | L7 and L8 (1st I-F Trans.) |
| 3 | Antenna Lead (Blue), in series with 200 mmf. | 1,500 kc | 1,500 kc (Cal. Mark) "A" Band | C28 (osc.) C20 (ant.) |
| 4 | Antenna Lead (Blue), in series with 200 mmf. | 600 kc | 600 kc (Cal. Mark) "A" Band | L6 (osc.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna Lead (Blue), in series with 400 ohms | 15.2 mc | 15.2 mc (Cal. Mark) "C" Band | C27 (osc.)* |
| 7 | Follow "Adjustments for Electric Tuning." | | | |

* Rock gang slightly while peaking C27, and use minimum capacity peak if two peaks can be obtained on C27.

**Note.**—Oscillator tracks 455 kc above signal on both bands.



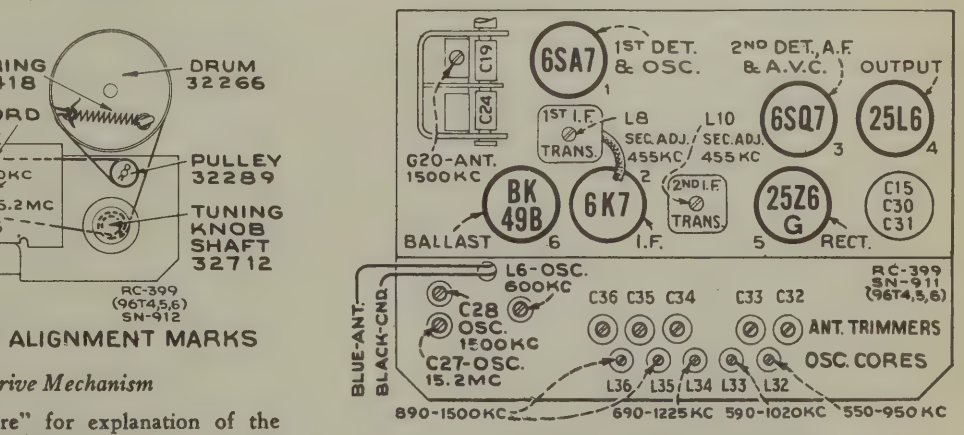

DIAL DRIVE HOOKUP AND ALIGNMENT MARKS

*Dial-Indicator and Drive Mechanism*

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing.

**Precautionary Lead Dress.—**

1. Volume control lead from 2nd I.F. transformer (E) should be dressed down on chassis.
2. A.C. leads to ballast tube should be dressed away from volume control lead on 2nd I.F. transformer.
3. Coupling condensers C2 and C4 should be dressed away from chassis.




*Tube and Trimmer Locations*

**Removing Push-Button Assembly.**—The push-button assembly is held to the chassis by two nuts on the front apron and may be quickly and easily swung out for convenient access to the sockets and other parts. No unsoldering is required, as flexible leads are used for all connections from the chassis to the assembly.

## Adjustments for Electric Tuning

These models have five push buttons for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Turn Range Control Knob to "Broadcast" position and tune in station No. 1 (560 kc in example) by Manual Dial Tuning, for reference.
3. Push in station-button No. 1 and turn Range Selector to "PB" position. Adjust No. 1 oscillator core (L32) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer (C32) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

6. Make a final careful adjustment of the oscillator cores and antenna trimmers, using one or two feet of wire as an antenna to ensure sharp peaking.

**Oscillation or Instability:**

Should an oscillating, squealing, or blocking tendency be experienced on these models it is possible that it results from use of a very short length of wire antenna, causing this circuit to resonate in the I-F range. This may be avoided by increasing length of the antenna, or adding a 100 mfd. capacitor directly across the antenna-ground input terminals. In the event that these operations fail to effect a remedy:

(a) See that the 0.1 mfd. capacitor C-37 mounted under I-F transformer is kept well away from oscillator coils by dressing same close to rear corner of chassis over the I-F leads.

(b) Dress the diode bus lead running from "B" of 2nd I-F transformer to 6SQ7 socket toward chassis away from oscillator coils. Dress 270 mmfd. molded capacitor C-14 over the bus lead.

(c) Add a 0.25 mfd. 200 volt capacitor in parallel with the high capacity electrolytic filter section.

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | **(RC399—Models 96T4 and 96T5)** |
| | **(RC399A—Model 96T6)** |
| 32544 | Ballast—Ballast resistor tube — type BK49B (R12, R13) |
| 31379 | Capacitor—Dual trimmer, comprising one 3-30 mmfd. and one 2-10 mmfd. sections (C27, C28) |
| 12723 | Capacitor—56 mmfd. (C4) |
| 14262 | Capacitor—109 mmfd. (C7, C8) |
| 12404 | Capacitor—120 mmfd. (C9, C10) |
| 14712 | Capacitor—180 mmfd. (C11) |
| 12488 | Capacitor—270 mmfd. (C14) |
| 30433 | Capacitor—470 mmfd. (C2) |
| 12537 | Capacitor—560 mmfd. (C21) |
| 32714 | Capacitor—730 mmfd. (C26) |
| 13895 | Capacitor—5,600 mmfd. (C22) |
| 5107 | Capacitor—.0025 mfd., 700 volts (C1) |
| 4838 | Capacitor—.005 mfd., 1,000 volts (C12, C17) |
| 14393 | Capacitor—.01 mfd., 300 volts (C3, C13, C16, C23, C38) |
| 4870 | Capacitor—.025 mfd., 400 volts (C18) |
| 4839 | Capacitor—0.1 mfd., 400 volts (C5, C6, C25, C29, C37) |
| 32708 | Capacitor—Electrolytic, comprising two 40 mfd., and one 20 mfd. sections (C15, C30, C31) |
| 32705 | Capacitor—Push button trimmer capacitor bank (C32, C33, C34, C35, C36) |
| 31382 | Clip—Push button coil mounting clip |
| 32706 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32707 | Coil—Oscillator coil (L5, L6) |
| 31385 | Coil—Push button oscillator coil — less core 550-950 KC. (L32) |
| 32704 | Coil—Push button oscillator coil — less core 590-1,020 KC. (L33) |
| 32340 | Coil—Push button oscillator coil — less core 690-1,225 KC. (L34) |
| 31383 | Coil—Push button oscillator coil — less core 890-1,500 KC. (L35, L36) |
| 32249 | Condenser—2-gang variable (C19, C20, C24) |
| 31413 | Control — Volume control, tone control, and power switch (R6, R9, S1) |
| 32634 | Cord—Drive cord |
| 31386 | Core—Core and stud for coil, Stock Nos. 31383, 31385, and 32704 |
| 30846 | Core—Core and stud for coil, Stock No. 32340 |
| 32713 | Core—Core and stud for oscillator coil, Stock No. 32707 |
| 32266 | Drum—Condenser drive cord drum |
| 32711 | Indicator—Dial indicator pointer |
| 31480 | Lamp—Dial lamp socket |
| 32710 | Plate—Dial color plate and pointer track |
| 5119 | Plug—3-contact female for speaker cable |
| 32289 | Pulley—Indicator drive cord pulley |
| 32709 | Reactor—Filter reactor (L12) |
| 30880 | Resistor—150 ohms, ½ watt (R10) |
| 14499 | Resistor—1,500 ohms, ½ watt (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 13734 | Resistor—120,000 ohms, ½ watt (R11) |
| 12199 | Resistor—270,000 ohms, ½ watt (R8) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 30271 | Resistor—4.7 meg., ½ watt (R7) |
| 32544 | Resistor—Ballast resistor tube—type BK49B (R12, R13) |
| 30340 | Retainer—Pulley retaining clip |
| 14343 | Retainer—Tuning knob shaft retaining ring |
| 4669 | Screw—No. 8-32 x ¾ square head set screw for drum |
| 32712 | Shaft—Tuning knob shaft and pulley |
| 31365 | Socket—Dial lamp socket |
| 31251 | Socket—Octal base tube socket |
| 31418 | Spring—Drive cord tension spring |
| 32703 | Switch—Push button switch (S32, S33, S34, S35, S36) |
| 32702 | Switch—Range switch (S2) |
| 14376 | Transformer—First i.f. transformer (L7, L8, C7, C8) |
| 14308 | Transformer—Second i.f. transformer (L9, L10, C9, C10, C11, R5) |
| 32544 | Tube—Ballast resistor tube — type BK49B (R12, R13) |
| | **SPEAKER ASSEMBLIES (84226-4)** |
| | **Models 96T4 and 96T5** |
| 32716 | Cone—Speaker cone and voice coil in housing (L11) |
| 32715 | Speaker—Complete |
| 32717 | Transformer—Output transformer (T1) |
| | **SPEAKER ASSEMBLIES (84307-4)** |
| | **Model 96T6** |
| 32719 | Cone—Speaker cone and voice coil in housing (L11) |
| 5118 | Plug—3-contact male plug for speaker |
| 32718 | Speaker—Speaker complete |
| 32720 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31428 | Button—Push button and spring |
| 31487 | Clip—Spring clip to hold dial scale |
| 31095 | Cover—One set protective covers for call letter markers |
| 32722 | Dial—Glass dial scale |
| 31667 | Escutcheon—Dial escutcheon (no crystal) |
| 31355 | Knob—Range switch knob |
| 31391 | Knob—Tone control knob |
| 14359 | Knob—Tuning knob |
| 30773 | Knob—Volume control knob |
| 30991 | Markers—One set station call letter markers |
| 32721 | Spring—Push button spring |
| 14270 | Spring—Retaining spring for range switch or volume control knob |
| 30330 | Spring—Retaining spring for tone control knob |
| 4982 | Spring—Retaining spring for tuning knob |

# MODELS 96X-1, -2, -3, -4 and -11, -12, -13, -14

## Chassis No. RC-400 and RC-400A

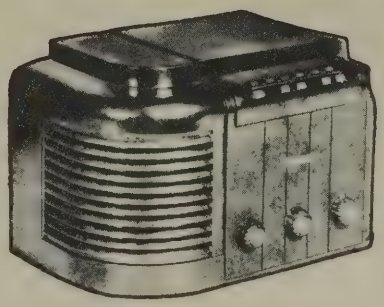
## Six-Tube, Two-Band, A-C—D-C, Superheterodyne Receivers

Models
96X-1
Walnut Finish

96X-2
Black Finish

96X-3
Walnut and
Ivory Finish

96X-4
Ivory Finish



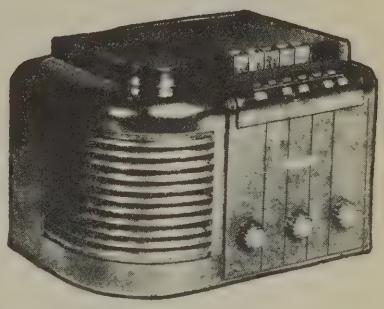
*Without Push-Button Tuning*

Models
96X-11
Walnut Finish

96X-12
Black Finish

96X-13
Walnut and
Ivory Finish

96X-14
Ivory Finish



*With Push-Button Tuning*

## Electrical and Mechanical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A) (left) ..... 540-1,720 kc
"Short Wave" (C) (right) ..... 5,800-18,000 kc

TUBE COMPLEMENT

(1) RCA-6K8 ..... 1st.-Detector—Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd-Det., 1st A-F, and A.V.C.
(4) RCA-25L6 ..... Power Output
(5) RCA-25Z6G ..... Half-Wave Rectifier
(6) RCA-BK-49B ..... Ballast

Pilot Lamp ..... Mazda No. 47, 6.3 volts, 0.15 amp.

POWER SUPPLY RATINGS

A-C Rating ..... 105-125 volts, 50-60 cycle, 50 watts
D-C Rating ..... 105-125 volts, direct current, 50 watts

INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT (125 volts, 60 cycle supply)

Undistorted 1.5 watts—Maximum ..... 2.0 watts

LOUDSPEAKER Type 84202-3 ..... 5-inch Electrodynamic

Cabinet Dimensions ... H. 7¾ inches W. 11¼ inches D. 7⅞ inches
Weights (net) 96X1, 2, 3, 4—8¼ lbs. .. 96X11, 12, 13, 14—9¼ lbs.
Tuning Drive Ratio ..... 8 to 1

**25 Cycle Operation.**—For 25 cycle operation change filter condensers to 40-40 mfd.

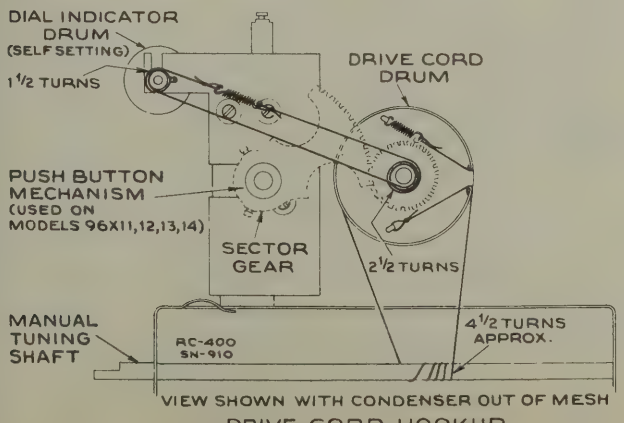
## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**Dial Setting.**—To set dial indicator drum, turn tuning condensers fully clockwise and then counter-clockwise.

**Push-button Adjustments.**—Remove bakelite button and loosen screw two turns with a screwdriver or coin. Tune in the desired station by means of the right-hand control knob. Press push lever down as far as it will go and tighten screw. Release lever and put on push-button.




DRIVE CORD HOOKUP

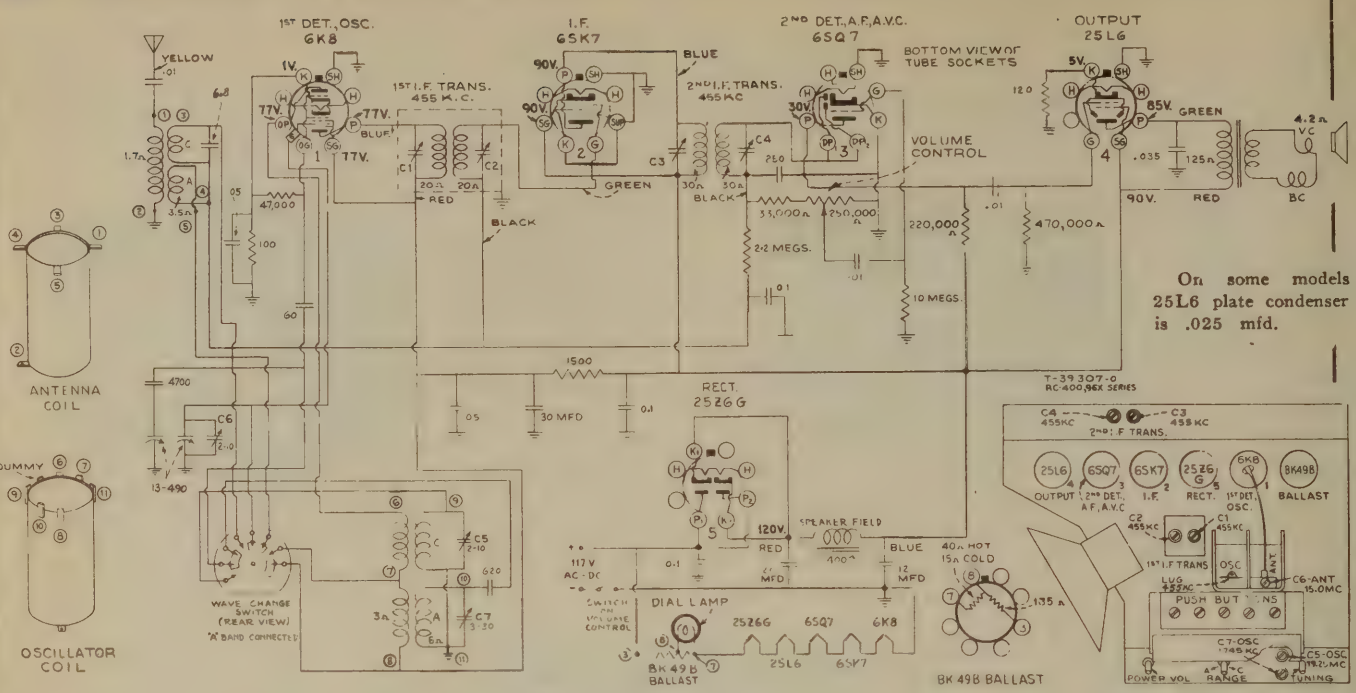
| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | Tuning condenser stator (osc.) in series with .01 mfd.† | 455 kc | Quiet point between 550-750 kc | C1, C2, C3, C4 (1st and 2nd I-F transformer) |
| 2 | Antenna lead (yellow) in series with 400 ohms | 19.25 mc | Full clockwise (out of mesh) "C" band | C5* (osc.) |
| 3 | Same as step 2 | 15.0 mc | 15.0 mc Test oscillator signal | C6** (ant.) See Note No. 1 |
| 4 | Antenna lead in series with 200 mmf condenser | 1,745 kc | Full clockwise (out of mesh) "A" band | C7 (osc.) |

* Use minimum capacity peak if two peaks can be obtained.
** Rock gang slightly and check to determine that C5 has been adjusted to the correct peak by tuning to approximately 14.09 mc, where a weaker signal should be received.
† Make test oscillator connection to lug on tuning condenser stator (oscillator section) in series with .01 mfd. condenser.

**Note No. 1.**—Accurately tune receiver to the 15.0 mc test oscillator signal. This signal will appear twice (14.09 and 15.0 mc) as dial is turned. Use the higher frequency setting of the tuning condensers (gang furthest out of mesh).

**Note No. 2.**—Oscillator tracks 455 kc above signal on all bands.

# 96X1, -2, -3, -4, -11, -12, -13, -14




On some models 25L6 plate condenser is .025 mfd.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| 32999 | Back—Cardboard back for cabinet |
| 32544 | Ballast—Ballast resistor type BK49B |
| 32530 | Button—Ivory push button for 96X11, 96X12 and 96X14 |
| 32528 | Button—Walnut push button for 96X13 |
| X-580 | Cabinet for 96X1 (net) |
| X-581 | Cabinet for 96X2 (net) |
| X-582 | Cabinet for 96X3 (net) |
| X-583 | Cabinet for 96X4 (net) |
| X-644 | Cabinet for 96X11 (net) |
| X-585 | Cabinet for 96X12 (net) |
| X-645 | Cabinet for 96X13 (net) |
| X-646 | Cabinet for 96X14 (net) |
| 32531 | Coil—Antenna coil |
| 32532 | Coil—Oscillator coil |
| 31379 | Condenser—Trimmer, one 3-30 mmfd. and one 2-10 mmfd. sections (C5, C7) |
| 14079 | Condenser—6.8 mmfd |
| 13057 | Condenser—60 mmfd |
| 12488 | Condenser—250 mmfd |
| 31399 | Condenser—4.700 mmfd |
| 4858 | Condenser—.01 mfd |
| 5196 | Condenser—.035 mfd |
| 4886 | Condenser—.05 mfd |
| 4839 | Condenser—0.1 mfd |
| 32548 | Condenser—Electrolytic, one 12 mfd. and one 20 mfd. sections |
| 32536 | Condenser—Variable tuning condenser |
| 31456 | Cover—1 set protective covers for push button markers |
| 32539 | Cord—Condenser drive cord |
| 32540 | Cord—Dial drive cord |
| 32526 | Dial—Black dial scale for 96X2 and 96X12 |
| 32527 | Dial—Ivory dial scale for 96X4 and 96X14 |
| 32525 | Dial—Walnut dial scale for 96X1, 96X3, 96X11 and 96X13 |
| 32290 | Gear—Sector gear fastens on cam shaft of tuning mechanism — Models 96X11, 96X12, 96X13, 96X14 |
| 32542 | Indicator—Dial indicator drum |
| 32522 | Knob—Ivory knob for 96X1, 96X2, 96X4, 96X11, 96X12, 96X14 |
| 32520 | Knob—Tan knob for 96X3 and 96X13 |

| STOCK No. | DESCRIPTION |
|---|---|
| 31480 | Lamp—Dial lamp |
| 31589 | Marker—1 set push button call letter markers |
| 32810 | Mechanism—Push button tuning mechanism comprising push arms, cam plate, frame, and mounting bracket assembled—Models 96X11, 96X12, 96X13, 96X14 |
| 32538 | Pulley—Condenser drive pulley and gear—Models 96X11, 96X12, 96X13 and 96X14 |
| 32541 | Pulley—Condenser drive pulley—Models 96X1, 96X2, 96X3, 96X4 |
| 31606 | Pulley—Indicator drum pulley |
| 32544 | Resistor—Ballast resistor type BK49B |
| 14439 | Resistor—100 ohms, ½ watt |
| 32535 | Resistor—120 ohms, wire wound |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 31482 | Screw—No. 8-32 set screw for condenser drive pulley or sector gear |
| 32510 | Screw—Push button cam locking screw—Models 96X11, 96X12, 96X13, 96X14 |
| 32547 | Shaft—Tuning knob shaft |
| 32543 | Socket—Dial lamp socket and bracket |
| 32537 | Socket—Tube socket |
| 31615 | Spring—Drive cord tension spring |
| 30585 | Spring—Push button lever spring—Models 96X11, 96X12, 96X13, 96X14 |
| 31646 | Spring—Retaining spring for knobs |
| 32546 | Switch—Band change switch |
| 32533 | Transformer—First i.f. transformer |
| 32534 | Transformer—Second i.f. transformer |
| 32545 | Volume control and power switch |
| | **SPEAKER ASSEMBLIES (84202-3)** |
| 31202 | Cone—Speaker cone and voice coil |
| 31203 | Transformer—Output transformer |

## MODELS 96X-11, -12, -13, -14

**Push-Arm Inserts:**

Special push-arm inserts are now available to take care of stripped threads on the push button mechanism in these models.

Stock No. 36160 Insert is for use in Models 9M1, 9M2, 96X-11, -12, -13, -14.

Stock No.

34053 Spring—Push button retaining spring

**Replacement Speaker RL-78-3:**

Stock No. 31201 speaker is superseded by Stock No. 34985 speaker (RL-78-3). The replacement parts for RL-78-3 speaker are:

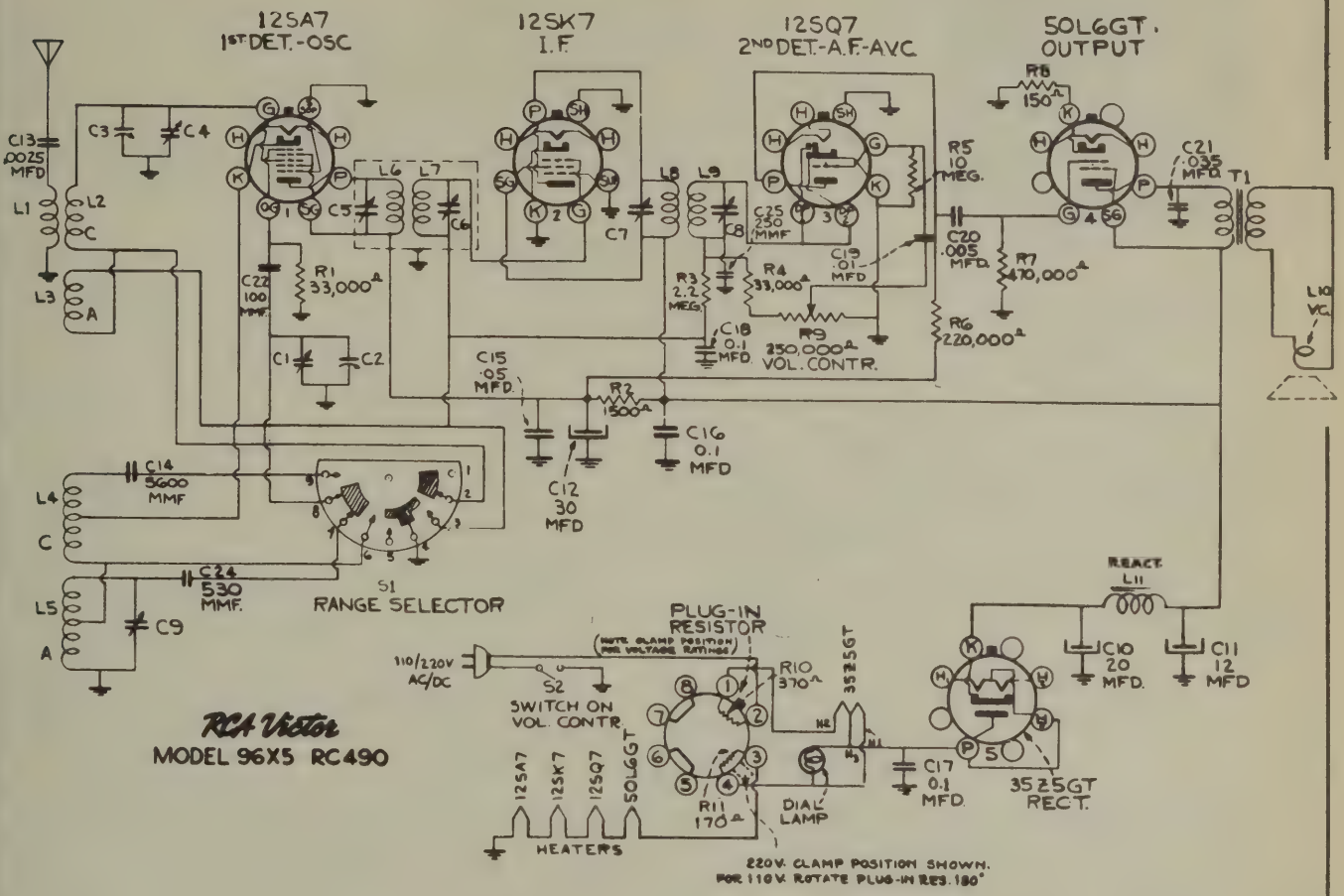
Stock No.

32907 Cap—Dust cap
33555 Coil—Field coil
32906 Coil—Neutralizing coil
34374 Cone—Cone and voice coil
34985 Speaker—Complete
33556 Transformer—Output transformer

# MODEL 96X5

## Chassis No. RC-490

## 5-Tube, Two-Band, AC-DC, Superheterodyne Receiver




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-490)** |
| 34458 | Ballast—Ballast resistor tube |
| 34461 | Capacitor—Electrolytic—comprising 1 section of 20 mfd. and 1 section of 12 mfd. (C10, C11) |
| 31379 | Capacitor—Trimmer—comprising 1 section of 3-30 mmfd. and 1 section of 2-15 mmfd. |
| 12720 | Capacitor—100 mmfd. (C22) |
| 12488 | Capacitor—270 mmfd. (C25) |
| 32492 | Capacitor—530 mmfd. (C24) |
| 13895 | Capacitor—5,600 mmfd. (C14) |
| 34459 | Capacitor—.0025 mfd. (C13) |
| 33584 | Capacitor—.005 mfd. (C20) |
| 4937 | Capacitor—.01 mfd. (C19) |
| 5196 | Capacitor—.035 mfd. (C21) |
| 32787 | Capacitor—.05 mfd. (C15) |
| 4839 | Capacitor—0.1 mfd. (C16, C17, C18) |
| 34460 | Capacitor—Electrolytic—comprising 1 section of 30 mfd. (C12) |
| 31378 | Coil—Antenna coil |
| 34452 | Coil—Oscillator coil |
| 32536 | Condenser—Variable tuning condenser |
| 32545 | Control—Volume control and power switch |
| 32634 | Cord—Indicator pointer drive cord |
| 32266 | Drum—Variable tuning condenser drive drum |
| 32711 | Indicator—Station selector pointer |
| 11765 | Lamp—Dial lamp |
| 34497 | Plate—Dial plate and pulleys assembled |
| 32541 | Pulley—Drive pulley |
| 34458 | Resistor—Ballast resistor tube |

| STOCK No. | DESCRIPTION |
|---|---|
| 13428 | Resistor—150 ohms, ½ watt (R8) |
| 14499 | Resistor—1,500 ohms, ½ watt (R2) |
| 12454 | Resistor—33,000 ohms, ½ watt (R1, R4) |
| 12264 | Resistor—220,000 ohms, ½ watt (R6) |
| 12285 | Resistor—470,000 ohms, ½ watt (R7) |
| 12679 | Resistor—2.2 megohm, ½ watt (R3) |
| 13601 | Resistor—10 megohm, ½ watt (R5) |
| 4669 | Screw—No. 8-32 square head set screw for drum, Stock No. 32266 |
| 31482 | Screw—No. 8-32 square head set screw for pulley, Stock No. 32541 |
| 34454 | Shaft—Tuning condenser drive shaft |
| 31365 | Socket—Dial lamp socket |
| 31319 | Socket—Tube socket |
| 31418 | Spring—Pointer drive cord spring |
| 31615 | Spring—Tuning condenser drive cord spring |
| 34451 | Switch—Range switch |
| 34453 | Transformer—First i-f transformer |
| 32534 | Transformer—Second i-f transformer |
| 34458 | Tube—Ballast resistor tube |
| 2917 | Washer—"C" washer for shaft, Stock No. 34454 |
| 34457 | Washer—Spring washer for shaft, Stock No. 34454 |
| | **MISCELLANEOUS ASSEMBLIES** |
| 34463 | Dial—Glass dial scale |
| 31667 | Escutcheon—Station selector escutcheon |
| 31659 | Knob—Tuning, range switch or volume control and power switch |
| 31646 | Spring—Retaining spring for knob, Stock No. 31659 |

# MODEL 97X

## Seven-Tube, Electric-Tuning, Single-Band, AC-DC Superheterodyne Receiver

Refer to Model 95T5 for Alignment Data and Changes in Chassis marked "MOD" or "M".

97X

**25-Cycle Operation.**—For operation with 25-cycle power supply, connect a 16 mfd., 150-volt dry electrolytic capacitor (Stock No. 31323) in parallel to C16.

**Power Supply Polarity.**—On d-c operation, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. On a-c operation, a similar reversal of the plug may reduce hum.

## Electrical Specifications

Frequency Range ..... 540-1,720 kc
One Station between approximately 550-980 kc (Button No. 1—left)
Two Stations between approximately 650-1,080 kc (Buttons 2 and 3)
Two Stations between approximately 850-1,500 kc (Buttons 4 and 5)
R-F Alignment Frequency ..... 1,500 kc (osc., ant.)
Intermediate Frequency ..... 455 kc

RCA Tube Complement
(1) RCA-6A8-G ..... First Detector—Oscillator
(2) RCA-6K7 ..... I-F Amplifier
(3) RCA-6H6 ..... Second Det., and A.V.C.
(4) RCA-6F5 ..... Audio Voltage Amplifier
(5) RCA-25L6-G ..... Power Output
(6) RCA-25Z6-G ..... Half-Wave Rectifier
(7) BK-42B ..... Ballast

Power Output
Undistorted ..... 1.0 watts
Maximum ..... 1.5 watts

Power Supply Rating
A-C Rating ..... 105-125 volts, 50-60 cycles, 55 watts
D-C Rating ..... 105-125 volts, 55 watts

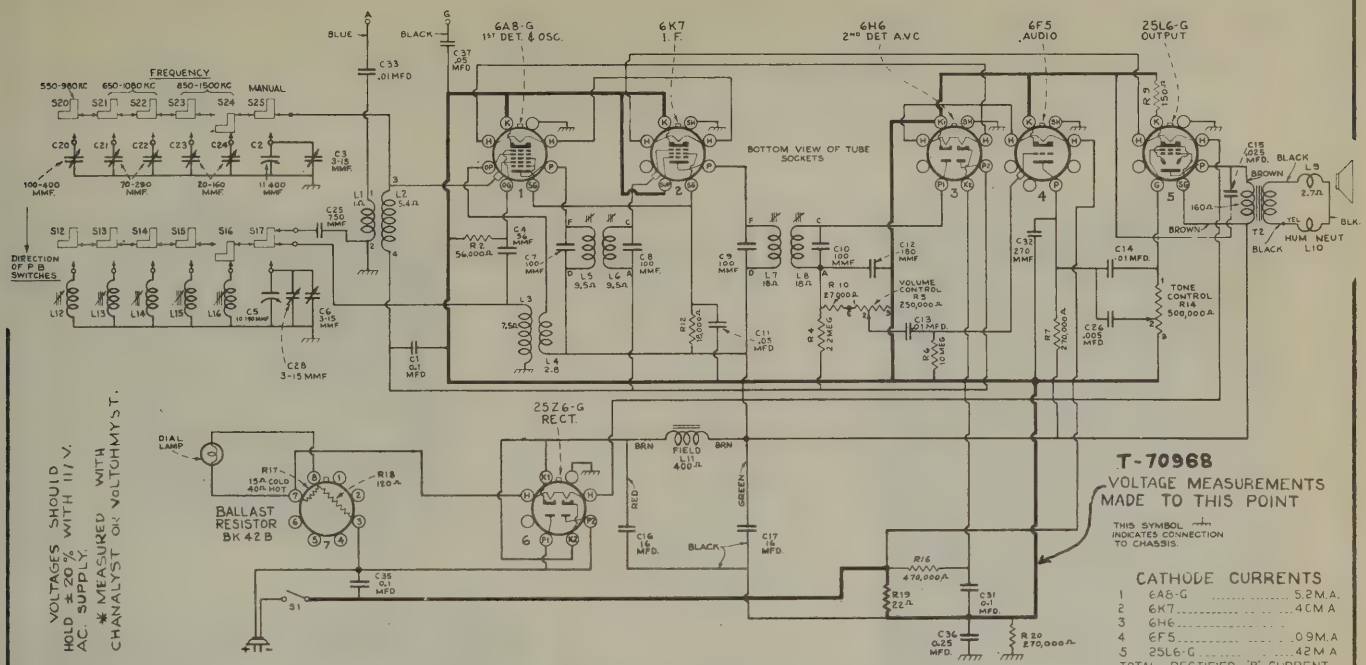
Pilot Lamp (1) ..... Mazda 47, 6.3 volts, .15 amp.

Loudspeaker (Electrodynamic)
Diameter (inches) ..... 5
V. C. Impedance at 400 cycles ..... 3.0 ohms

## REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| 31483 | Ballast—Ballast resistor tube type BK42-B (R17, R18) | | 13045 | Resistor—18,000 ohms, ½ watt (R12) | |
| 14338 | Bushing—Variable tuning condenser mounting bushing and hardware | | 12738 | Resistor—27,000 ohms, ½ watt (R10) | |
| 31416 | Capacitor—Antenna coil trimmer capacitor bank (C20, C21, C22, C23, C24) | | 12286 | Resistor—56,000 ohms, ½ watt (R2) | |
| 12723 | Capacitor—56 mmfd. (C4) | | 12199 | Resistor—270,000 ohms, ½ watt (R7, R20) | |
| 30904 | Capacitor—100 mmfd. (C7, C8, C9, C10) | | 12285 | Resistor—470,000 ohms, ½ watt (R16) | |
| 13003 | Capacitor—180 mmfd. (C12) | | 12679 | Resistor—2.2 megohm, ½ watt (R4) | |
| 12488 | Capacitor—270 mmfd. (C32) | | 13601 | Resistor—10 megohm, ½ watt (R6) | |
| 31435 | Capacitor—750 mmfd. (C25) | | 14887 | Retainer—Indicator drive cord pulley retainer | |
| 4838 | Capacitor—.005 mfd. (C26) | | 31482 | Screw—No. 8 square head set screw for drum Stock No. 31421 | |
| 4870 | Capacitor—.025 mfd. (C15) | | 31365 | Socket—Dial lamp socket | |
| 14393 | Capacitor—.01 mfd. (C13, C14, C33) | | 31251 | Socket—Tube socket | |
| 4886 | Capacitor—.05 mfd. (C37) | | 31418 | Spring—Indicator drive cord tension spring | |
| 30882 | Capacitor—.05 mfd. (C11) | | 31414 | Switch—Selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25) | |
| 4839 | Capacitor—0.1 mfd. (C1, C31, C35) | | 30957 | Transformer—1st i.f. transformer (L5, L6, C7, C8) | |
| 12484 | Capacitor—0.25 mfd. (C36) | | 30903 | Transformer—2nd i.f. transformer (L7, L8, C9, C10) | |
| 31479 | Capacitor—Comprising two sections of 16 mfd. each (C16, C17) | | 31484 | Transformer—Output transformer (T2) | |
| 30894 | Coil—Antenna coil (L1, L2) | | 31483 | Tube—Ballast resistor tube type BK42-B (R17, R18) | |
| 31098 | Coil—Oscillator coil (L3, L4) | | | | |
| 31383 | Coil—Push button oscillator coil (L15, L16) | | | SPEAKER ASSEMBLIES (Speaker No. 84326-3) | |
| 31384 | Coil—Push button oscillator coil (L13, L14) | | | | |
| 31415 | Coil—Push button oscillator coil (L12) | | 31486 | Cone—Speaker cone and voice coil (L9) | |
| 31422 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C28) | | 31485 | Speaker—Speaker complete | |
| 31413 | Control—Volume control, tone control and on-off switch (R5, R14, S1) | | | MISCELLANEOUS ASSEMBLIES | |
| 31481 | Cord—Drive cord—36-in. long silk cord | | | | |
| 30905 | Core—Adjustable core assembly for i.f. transformer | | 31428 | Button—Station selector push button | |
| 31386 | Core—Adjustable core and stud for oscillator coils | | 31487 | Clip—Spring clip and washers to hold dial scale | |
| 31421 | Drum—Indicator drive drum and hub | | 31429 | Dial—Station selector dial scale | |
| 31420 | Indicator—Station selector indicator pointer | | 31095 | Disc—10 protector discs for call letter markers | |
| 31480 | Lamp—Dial lamp | | 31355 | Knob—Station selector knob | |
| 31419 | Plate—Colored dial plate comprising plate, spacers and screws | | 30773 | Knob—Tone control or dummy knob | |
| 31373 | Pulley—Indicator drive cord pulley | | 31391 | Knob—Volume control knob | |
| 31483 | Resistor—Ballast resistor tube type BK42-B (R17, R18) | | 30991 | Marker—Station call letter push button markers | |
| 14525 | Resistor—22 ohms, ½ watt (R19) | | 31488 | Mounting—Chassis mounting screw and washer | |
| 30880 | Resistor—150 ohms, ½ watt (R9) | | 14270 | Spring—Retaining spring for knob Stock No. 30773 and 31355 | |
| | | | 30330 | Spring—Retaining spring for knob Stock No. 31391 | |




*Schematic Circuit Diagram*

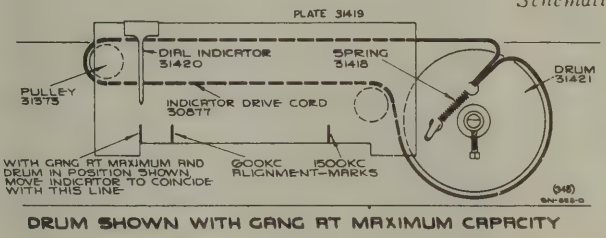
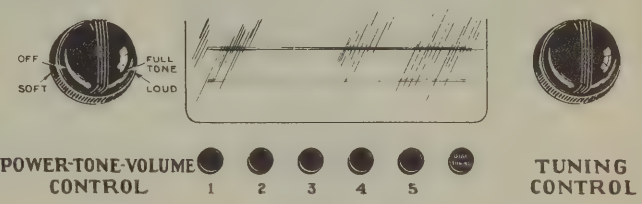


PLATE 31419
DIAL INDICATOR 31420
SPRING 31418
DRUM 31421
PULLEY 31575
INDICATOR DRIVE CORD 30877
WITH GANG AT MAXIMUM AND DRUM IN POSITION SHOWN MOVE INDICATOR TO COINCIDE WITH THIS LINE
600KC
1500KC ALIGNMENT-MARKS
DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

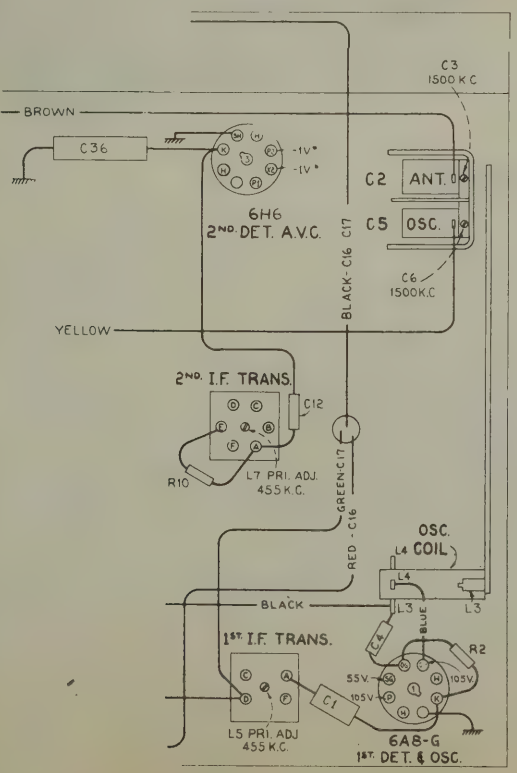
*Dial-Indicator and Drive Mechanism*

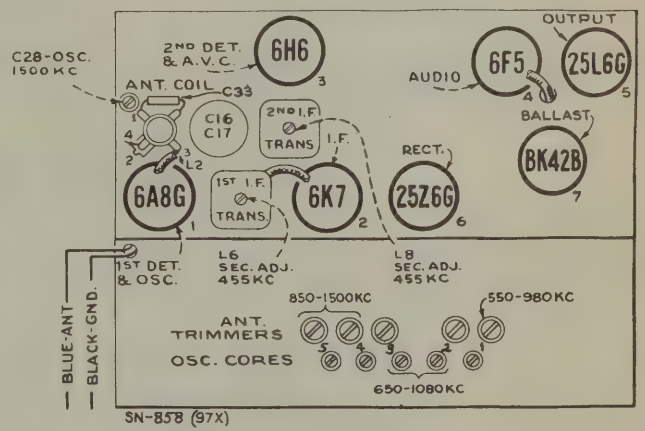
Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing




*Location of Controls*

The right-hand push button is for dial tuning




*Tube and Trimmer Locations*

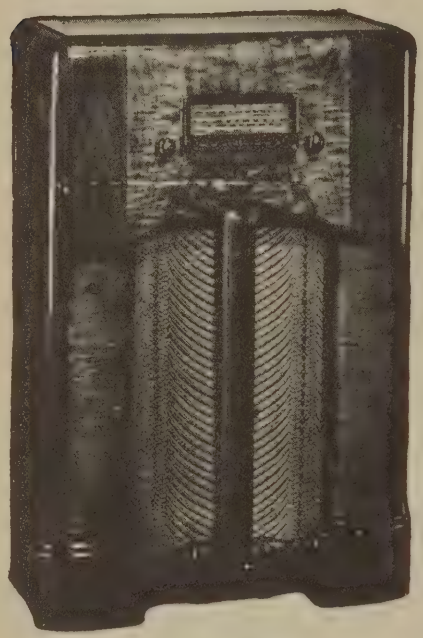
**Precautionary Lead Dress.—**

1. Dress green lead from antenna coil to switch away from the chassis and gang.
2. Dress green leads from trimmer bank away from the oscillator-core adjustment screws.
3. Dress heater lead from 6H6 to 6A8-G away from the 2nd I.F. transformer.
4. Dress black lead from electrolytic to volume control against front apron.

# MODELS 97Y, 98X, 98EY, 98YG

Chassis No. RC-352A RC-352 RC-352 RC-352

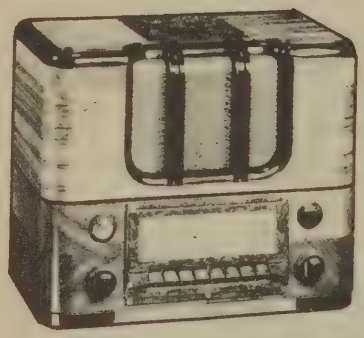
## Seven- and Eight-Tube, Three-Band, Electric-Tuning, AC-DC Superheterodyne Receivers



**Model 98EY →**
END TABLE
8 Tubes, Including Ballast. 8-inch Speaker

**← Model 97Y**
CONSOLE
7 Tubes, Including Ballast. 12-inch Speaker

**Model 98YG →**
CONSOLE GRAND
8 Tubes, Including Ballast. 12-inch Speaker



**← Model 98X**
TABLE MODEL
8 Tubes, Including Ballast. 6-inch Speaker

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "Medium Wave" (B) | 2.3-7 mc |
| "Short Wave" (C) | 7-22 mc |

R-F ALIGNMENT FREQUENCIES

| | |
|---|---|
| "Short Wave" (C) | 20 mc (osc., ant.) |
| "Medium Wave" (B) | 6.1 mc (osc.) |
| "Standard Broadcast" (A) | 1,500 kc (osc.) |

Intermediate Frequency ..... 455 kc

Six Electric Tuning Positions ..... 550-1,500 kc
2 stations between approximately 550- 950 kc (Buttons 1 and 2)
2 stations between approximately 680-1,180 kc (Buttons 3 and 4)
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)

RCA TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6K8 | First-Detector—Oscillator |
| (2) RCA-6K7 | Intermediate-Frequency Amplifier |
| (3) RCA-6H6 | Second-Detector and A.V.C. |
| (4) RCA-6J7 | Audio Voltage Amplifier |
| (5) RCA-25L6 | Audio Power Amplifier |
| (6) RCA-25Z6 | Half-Wave Rectifier |
| RCA-6U5 (Models 98X, 98EY, 98YG) | Tuning Tube |
| RCA Stock No. 31577 (Models 98X, 98EY, 98YG) | Ballast Tube |
| RCA-BK36C (Model 97Y) | Ballast Tube |

Pilot Lamps (2 on Model 97Y) (3 on Models 98X, 98EY, 98YG) ..... Mazda 47, 6.3 volts, .15 amp.

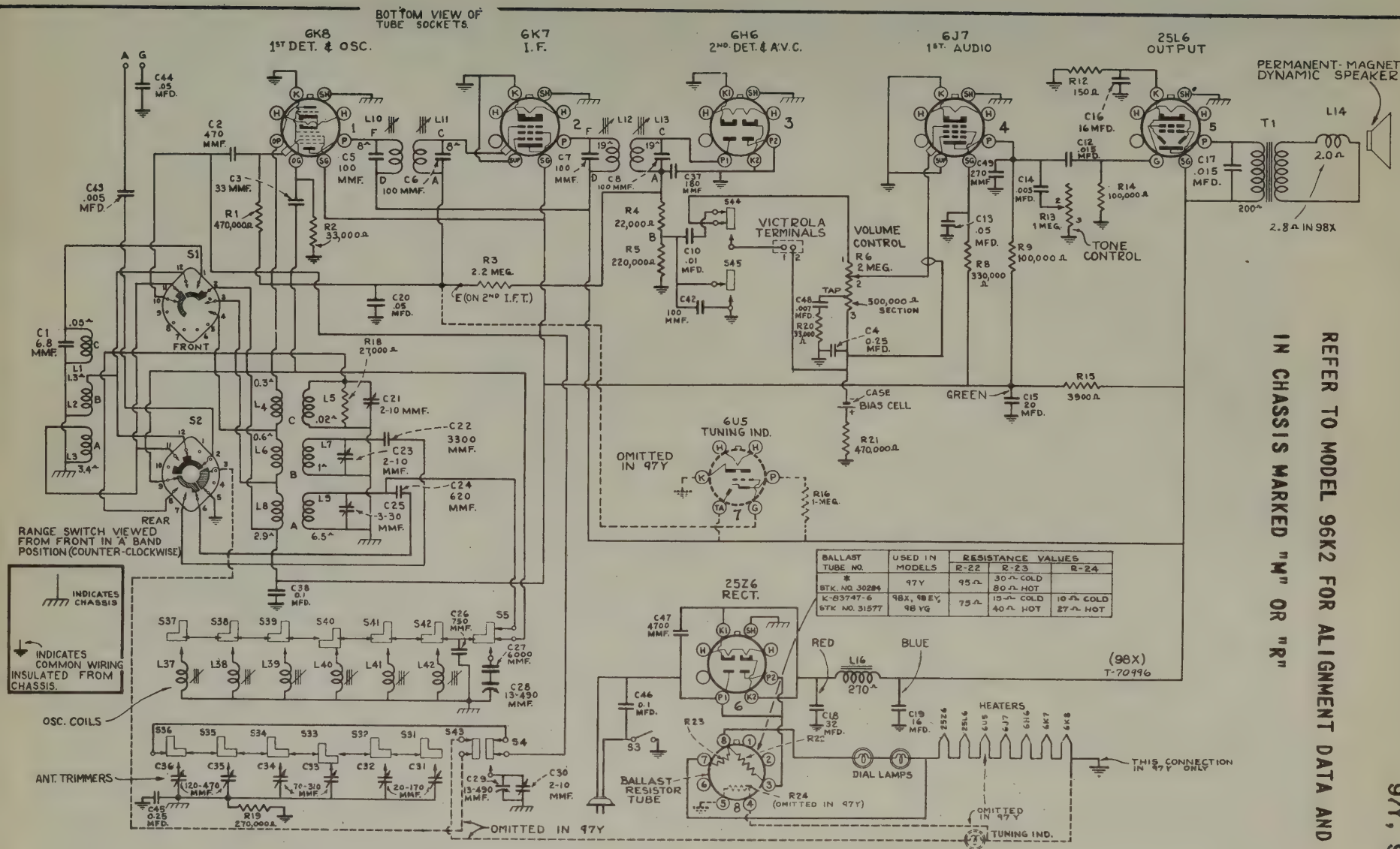
POWER OUTPUT

| | |
|---|---|
| Undistorted | 1.5 watts |
| Maximum | 2.5 watts |

POWER SUPPLY RATING

| | |
|---|---|
| A-C Rating | 105-125 volts, 25-60 cycles, 55 watts |
| D-C Rating | 105-125 volts, 55 watts |

| LOUDSPEAKER (PERMANENT-MAGNET DYNAMIC) | 97Y | 98X | 98EY | 98YG |
|---|---|---|---|---|
| Diameter | 12 inches | 6 inches | 8 inches | 12 inches |
| V. C. Impedance at 400 cycles | 2.2 ohms | 3 ohms | 2.2 ohms | 2.2 ohms |




| BALLAST TUBE NO. | USED IN MODELS | RESISTANCE VALUES R-22 | R-23 | R-24 |
|---|---|---|---|---|
| * STK. NO. 30284 | 97Y | 95Ω | 30Ω COLD 80Ω HOT | |
| K-83747-6 STK NO. 31577 | 98X, 98EY, 98YG | 75Ω | 15Ω COLD 40Ω HOT | 10Ω COLD 27Ω HOT |

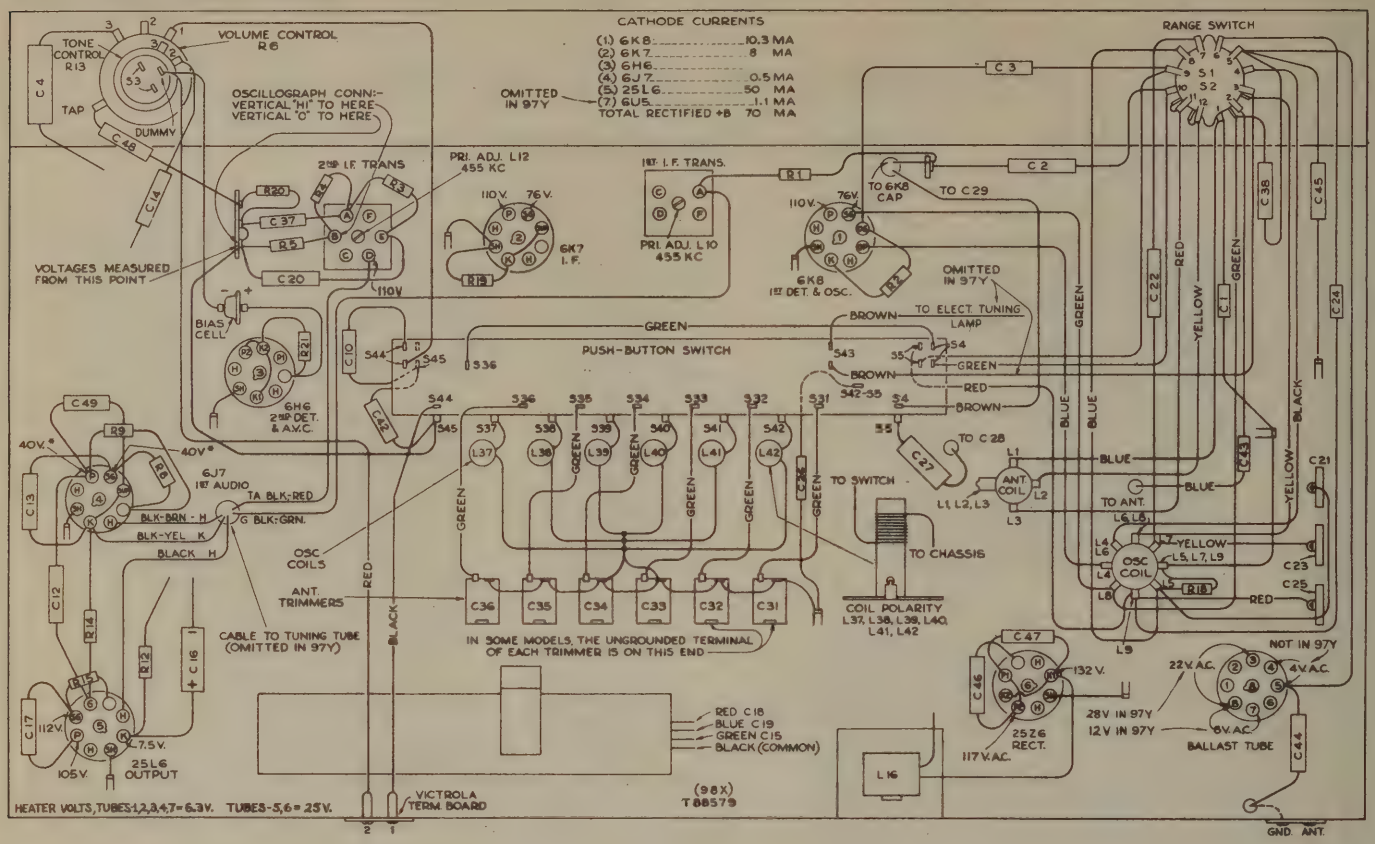
*Schematic Circuit Diagram*

* The ballast tube in Model 97Y is RCA-BK36B

**Precautionary Lead Dress.—**

1. Dress the bias cell clear of all bus leads.
2. Dress R1 away from front of chassis.
3. Leads from S43 must be dressed in front of range switch.
4. Blue lead from range switch to L5 must be short and clear of other leads.
5. Dress leads away from antenna coil.
6. Leads across back of chassis must be dressed under electrolytic to prevent approaching Victrola jack.

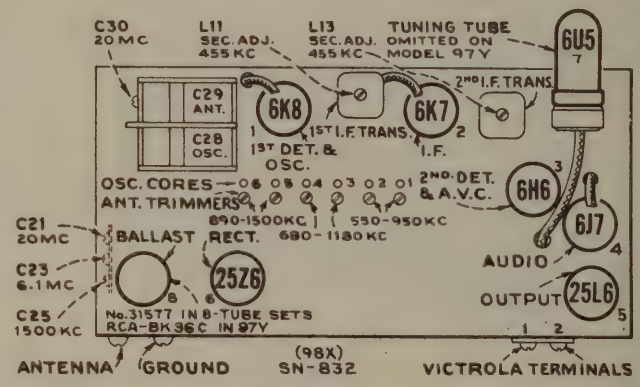
REFER TO MODEL 96K2 FOR ALIGNMENT DATA AND CHANGES IN CHASSIS MARKED "M" OR "R"




*R-F Wiring Diagram and Socket Voltages*

Measurements made to low-side of tone control unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.




*Tube and Trimmer Locations*

## Miscellaneous Service Notes

**Bias Cell.** — The bias cell provides approximately 1-volt bias for the 1st-audio grid. **The cell should never be shorted, not measured with an ordinary voltmeter or other device that draws current.** The cell may be checked by measuring the 1st-audio cathode current with a new tested 6J7 tube in this socket. The current should be approximately ½ milliampere. If it is appreciably greater than ½ mil., install a new bias cell.

**Victrola Atachment.** — Two screw-type terminals, numbered 1 and 2, are provided on the rear apron of the chassis for connection to a Victrola Attachment, such as the R-93, R-93-B, etc. *(When A-C supply is available.)*

**Care must be taken that these terminals are never connected in any way to the chassis, otherwise injury will result to the bias cell. To safeguard against this possibility, the following precautions should be observed in connecting the Victrola Attachment to the receiver.**

**Victrola Attachment with shielded cable.** — If the shielded cable has a plug connector, remove the plug, connect the shielding to terminal 1, and connect the lead (inside the shielding) to terminal 2. Tape the shielding for a sufficient distance to prevent the possibility of it shorting against the chassis.

**Victrola Attachment with twisted-pair cable.**—Connect the low-side of the Attachment to terminal No. 1, and the high-side of the Attachment to terminal No. 2. (In some Attachments, the lead from the low-side is black, and the lead from the high-side is black-brown.)

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. For operation on a-c, a similar reversal of the plug may reduce hum.

**Wiring Change:**

The shield of cable which interconnects the 6J7 grid to the volume control, has been changed from the tone control terminal to terminal No. 3 (one nearest end of chassis) of the volume control. Such a change of return point for the shield minimizes hum and possible audio oscillation.

The correct connection is shown in the Service Data diagram.

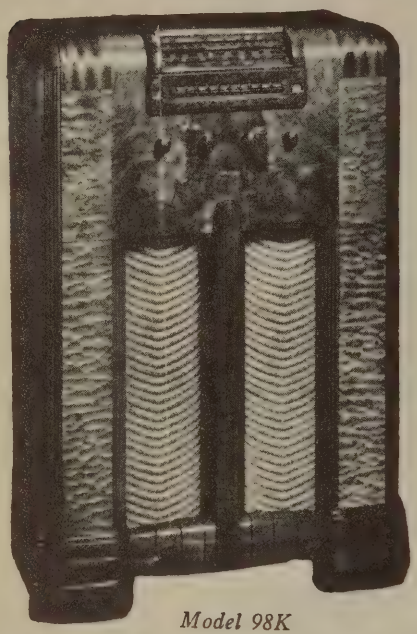
# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 31577 | Ballast—Ballast resistor tube (R22, R23, R24) Models 98X, 98EY and 98YG |
| 30284 | Ballast—Ballast resistor tube (R22, R23) Model 97Y |
| 31767 | Board—Antenna-ground terminal board |
| 31579 | Board—Phonograph terminal board |
| 30752 | Bracket—Bracket for holding Magic Eye tube —Models 98X, 98EY and 98YG |
| 14338 | Bushing—Variable condenser mounting bushing and screws |
| 31400 | Capacitor—Adjustable trimmer capacitor, two sections 2-10 mmfd. and one section 3-30 mmfd. (C21, C23, C25) |
| 14079 | Capacitor—6.8 mmfd. (C1) |
| 31387 | Capacitor—Antenna coil trimmer capacitor bank —20-470 mmfd. (C31, C32, C33, C34, C35, C36) |
| 12948 | Capacitor—33 mmfd. (C3) |
| 12720 | Capacitor—100 mmfd. (C42) |
| 13003 | Capacitor—180 mmfd. (C37) |
| 12488 | Capacitor—270 mmfd. (C49) |
| 30433 | Capacitor—470 mmfd. (C2) |
| 31381 | Capacitor—620 mmfd. (C24) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 4881 | Capacitor—3300 mmfd. (C22) |
| 12897 | Capacitor—4700 mmfd. (C47) |
| 31405 | Capacitor—6000 mmfd. (C27) |
| 5148 | Capacitor—.007 mfd. (C48) |
| 4838 | Capacitor—.005 mfd. (C14, C43) |
| 14393 | Capacitor—.01 mfd. (C10) |
| 11315 | Capacitor—.015 mfd. (C12, C17) |
| 4886 | Capacitor—.05 mfd. (C13, C20, C44) |
| 4839 | Capacitor—0.1 mfd. (C38, C46) |
| 12484 | Capacitor—0.25 mfd. (C4, C45) |
| 31323 | Capacitor—16 mfd. (C16) |
| 31576 | Capacitor—Comprising one 32 mfd., one 20 mfd., and one 16 mfd. section (C15, C18, C19) |
| 30904 | Capacitor—100 mfd. (C5, C6, C7, C8) |
| 31581 | Cell—Bias cell |
| 31382 | Clip—Mounting clip for coils and cores on oscillator bank |
| 31402 | Coil—Antenna coil (L1, L2, L3) |
| 31401 | Coil—Oscillator coil (L4, L5, L6, L7, L8, L9, C24) |
| 31385 | Coil—Push button oscillator coil (L37, L38) |
| 31384 | Coil—Push button oscillator coil (L39, L40) |
| 31383 | Coil—Push button oscillator coil (L41, L42) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 5119 | Connector—3-contact female connector plug for reproducer cable |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 31374 | Cord—Indicator pointer drive cord |
| 31375 | Cord—Indicator pointer drive cord |
| 30905 | Core—Adjustable core for i-f transformer |
| 31386 | Core—Adjustable core and stud assembly for oscillator bank |
| 31372 | Drum—Variable condenser drive cord drum and calibrator |
| 31580 | Holder—Bias cell holder |
| 31480 | Lamp—Dial lamp |
| 31373 | Pulley—Drive cord pulley |
| 5066 | Reactor (L16) |
| 31577 | Resistor—Ballast resistor (R22, R23, R24) —Models 98X, 98EY and 98YG |
| 30284 | Resistor—Ballast resistor (R22, R23)—Model 97Y |
| 30880 | Resistor—150 ohms, ½ watt (R12) |
| 30694 | Resistor—3,900 ohms, ½ watt (R15) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R18) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2, R20) |
| 14560 | Resistor—100,000 ohms, ½ watt (R9, R14) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R19) |
| 14983 | Resistor—330,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R1, R21) |
| 12013 | Resistor—1 meg. 1/10 watt (R16) Models 98X, 98EY and 98YG |
| 12679 | Resistor—2.2 meg, ½ watt (R3) |
| 14343 | Retainer—Drive cord pulley retainer |
| 14887 | Retainer—Retainer for drive cord pulley |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 31199 | Shield—Dial lamp shield |
| 12110 | Shield—Radiotron shield cap |
| 31365 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket—Models 98X, 98EY and 98YG |
| 31251 | Socket—Tube socket |
| 31313 | Spring—Tension spring for station selector push button switch latch bar |
| 31418 | Spring—Indicator or drum drive cord tension spring |
| 31370 | Switch—Push button selector switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 31398 | Switch—Range switch (S1, S2) |
| 30957 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 30903 | Transformer—Second i-f transformer (L12, L13, C7, C8) |
| 31577 | Tube—Ballast resistor tube (R22, R23, R24)—Models 98X, 98EY and 98YG |
| 30284 | Tube — Ballast resistor tube (R22, R23)—Model 97Y |
| | **SPEAKER ASSEMBLIES Model 98X (84307-1)** |
| 31665 | Cone—Speaker cone and voice coil (L14) |
| 5118 | Plug—3 contact male plug for speaker |
| 31664 | Speaker complete |
| 31666 | Transformer—Output transformer (T1) |
| | **SPEAKER ASSEMBLIES Models 97Y and 98YG (Speaker RL 71 A-1)** |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 5118 | Plug—3 Contact male plug for speaker |
| 31798 | Speaker—Less output transformer |
| 14628 | Transformer—Output transformer (T1) |
| | **SPEAKER ASSEMBLIES Model 98EY (Speaker RL 73-5)** |
| 31310 | Cone—Speaker cone and voice coil (L14) |
| 5118 | Plug—3 Contact male plug for speaker |
| 31997 | Speaker Complete |
| 14628 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 12038 | Band—Rubber band shield for Magic Eye—Models 98X, 98EY and 98YG |
| 31397 | Button—Station selector push button |
| 31456 | Cover — 8-protective covers for push button markers |
| 31394 | Clip—Pointer travel stop clip |
| 31406 | Dial—Station selector dial scale |
| 31543 | Disc—Electric Tuning indicator disc — Models 98X, 98EY and 98YG |
| 31407 | Escutcheon—Magic Eye or Electric Tuning indicator escutcheon—Models 98X, 98EY and 98YG |
| 31395 | Escutcheon—Station selector escutcheon less dial scale and push buttons |
| 31392 | Indicator—Station selector indicator pointer |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31457 | Marker—"Record Player" push button marker |
| 31589 | Marker—Station call letters push button markers |
| 31393 | Screen—Color screen for dial frame |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |
| 14270 | Spring—Retaining spring for knob Stock Nos. 30773 and 31355 |

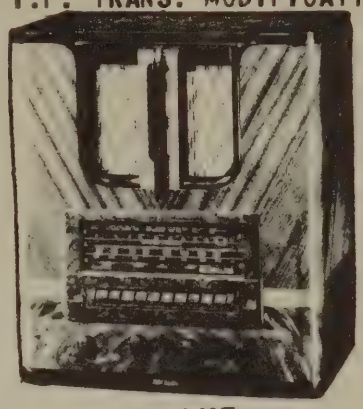
# MODELS 98K 99K and 99T

## 8 & 9 Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Receivers

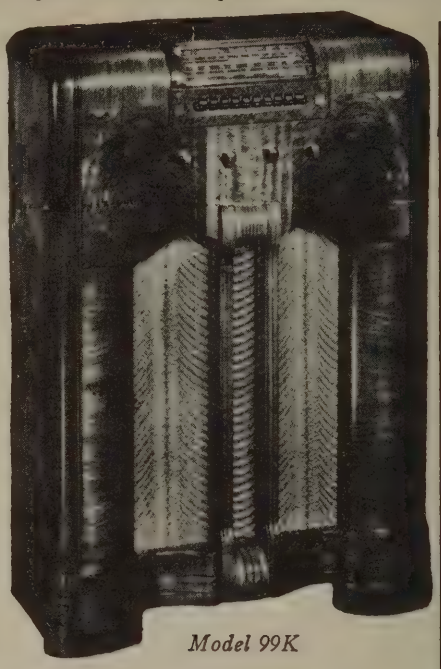


*Model 98K*

REFER TO MODEL U-126
PAGE 444C
FOR ALIGNMENT PROCEDURE
AND I.F. TRANS. MODIFICATION



*Model 99T*



*Model 99K*

## Electrical Specifications

| Frequency Ranges | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "Medium Wave" (B) | 2,300-7,000 kc |
| "Short Wave" (C) | 7,000-22,000 kc |

| R-F Alignment Frequencies | |
|---|---|
| "Short Wave" (C) | 20,000 kc (osc., ant.) |
| "Medium Wave" (B) | 6,100 kc (osc.) |
| "Broadcast" (A) | 600 kc (osc.), 1,500 kc (osc., ant.) |

Intermediate Frequency ..... 455 kc

| RCA Tube Complement 98K | |
|---|---|
| (1) RCA—6A8 | First Detector |
| (2) RCA—6J7 | Oscillator |
| (3) RCA—6K7 | Intermediate Amplifier |
| (4) RCA—6H6 | Second Det., A.V.C., and Muting |
| (5) RCA—6F5 | Audio Amplifier |
| (6) RCA—6F6 | Power Output |
| (7) RCA—6G5 or 6U5 | "Magic Eye" Tuning Tube |
| (8) RCA—5W4 | Full-Wave Rectifier |

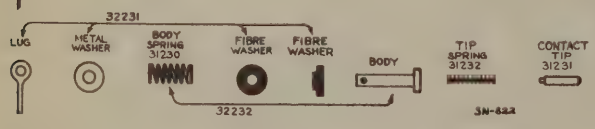
| RCA Tube Complement 99K, 99T | |
|---|---|
| (1) RCA-6A8 | First Detector |
| (2) RCA-6J7 | Oscillator |
| (3) RCA-6K7 | Intermediate Amplifier |
| (4) RCA-6Q7 | Second Det., A.V.C., Muting, Audio Amplifier |
| (5) RCA-6F5 | Phase Inverter, Audio Amplifier |
| (6) RCA-6F6 | Power Output |
| (7) RCA-6F6 | Power Output |
| (8) RCA-6G5 or 6U5 | "Magic Eye" Tuning Tube |
| (9) RCA-5T4 | Full-Wave Rectifier |

Pilot Lamps (3) ..... one 6-8 volts, .15 amp., and two Mazda 44, 6.3 volts, .25 amp.

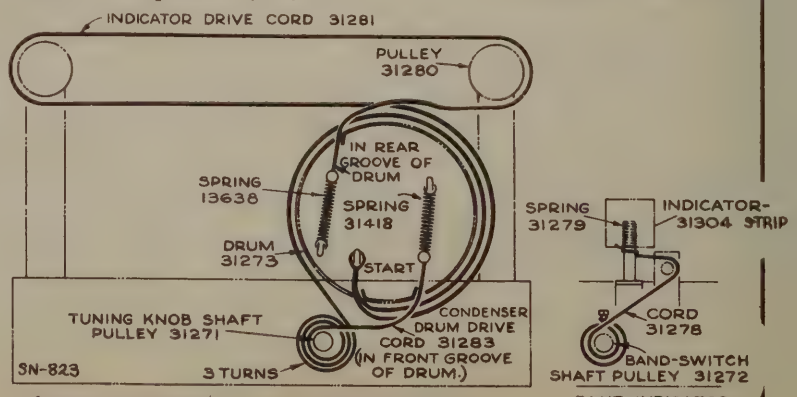
| Power Supply Ratings | 98K | 99K, 99T |
|---|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 80 watts | 120 watts |
| Rating B | 105-125 volts, 25 cycles, 80 watts | 120 watts |
| Rating C | 105-125/140-160/200-250 volts, 50-60 cycles, 80 watts | 120 watts |

| Power Output | 98K | 99K, 99T |
|---|---|---|
| Undistorted | 2.5 watts | 10 watts |
| Maximum | 4.5 watts | 12 watts |

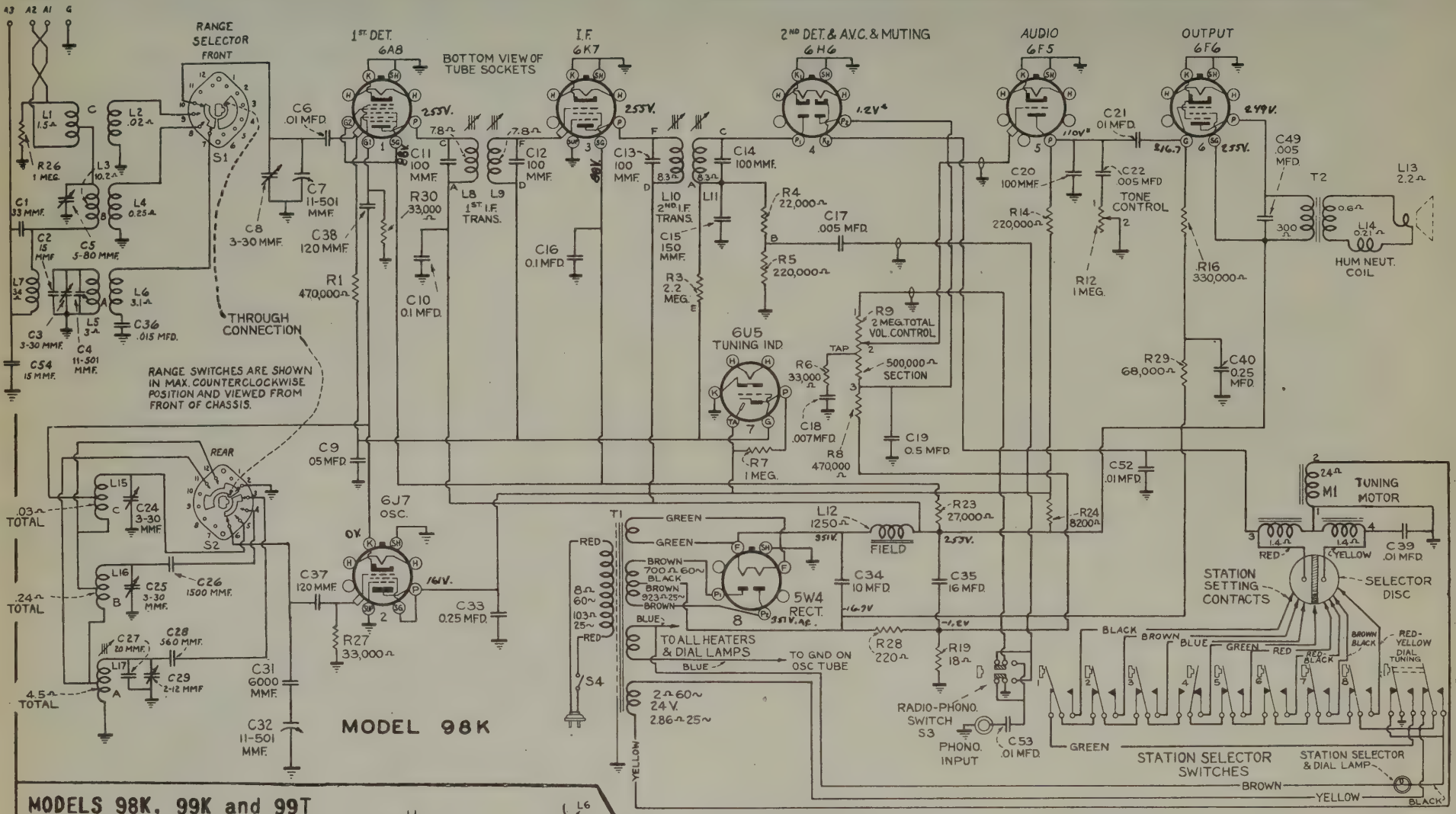
| Loudspeaker | |
|---|---|
| Type | Electrodynamic |
| Impedance (v.c.) | 2.2 ohms at 400 cycles |



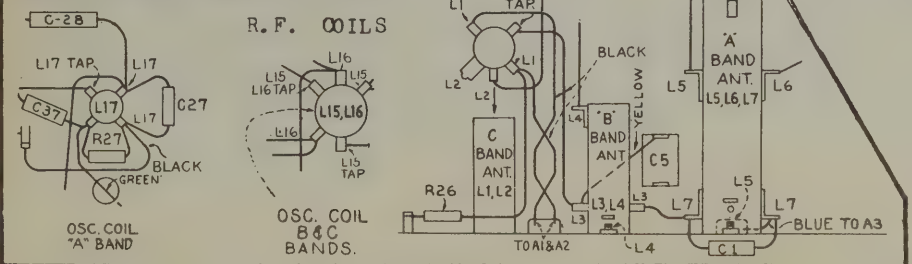

*(Above) Component Parts of Station-Setting Contact*




*(At Right) Drive Cord Arrangement for Tuning Condenser, Dial Indicator, and Band Switch*



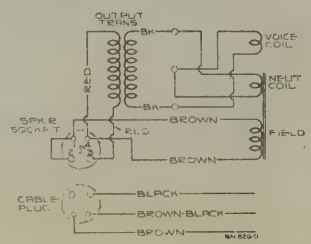

## MODELS 98K, 99K and 99T




### CATHODE CURRENTS

| | |
|---|---|
| No. 1 | 7.8 MA. |
| No. 2 | 8.3 MA. |
| No. 3 | (6.3 MA. (OPERATING)<br>10 MA. (MEASURED) |
| No. 5 | 0.3 MA. |
| No. 6 | 45.5 MA. |
| No. 7 | 1.7 MA. |

TOTAL RECTIFIED "B" CURRENT 71 MA



Connections and Colors of Loudspeaker and Cable.

## Tuning Motor Connections:

On some instruments, tuning motor terminal No. 4 is grounded, C39 is omitted, and terminal No. 1 is not used.

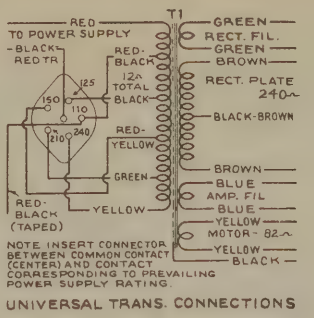
Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

CATHODE CURRENTS

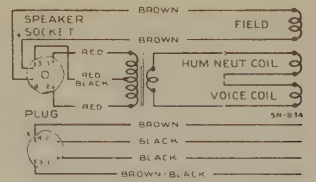
| | | | |
|---|---|---|---|
| (1)** | 6.6 M.A. | (5) | .35 M.A. |
| (2)** | 8.3 M.A | (6) | 28 M.A. |
| (3) | 8.4 M.A | (7) | 28 M.A. |
| (4) | 0.5 M.A. | (8) | 1.0 M.A. |

TOTAL RECTIFIED "B" CURRENT 108 M.A.

** BASED ON -3 VOLT BIAS

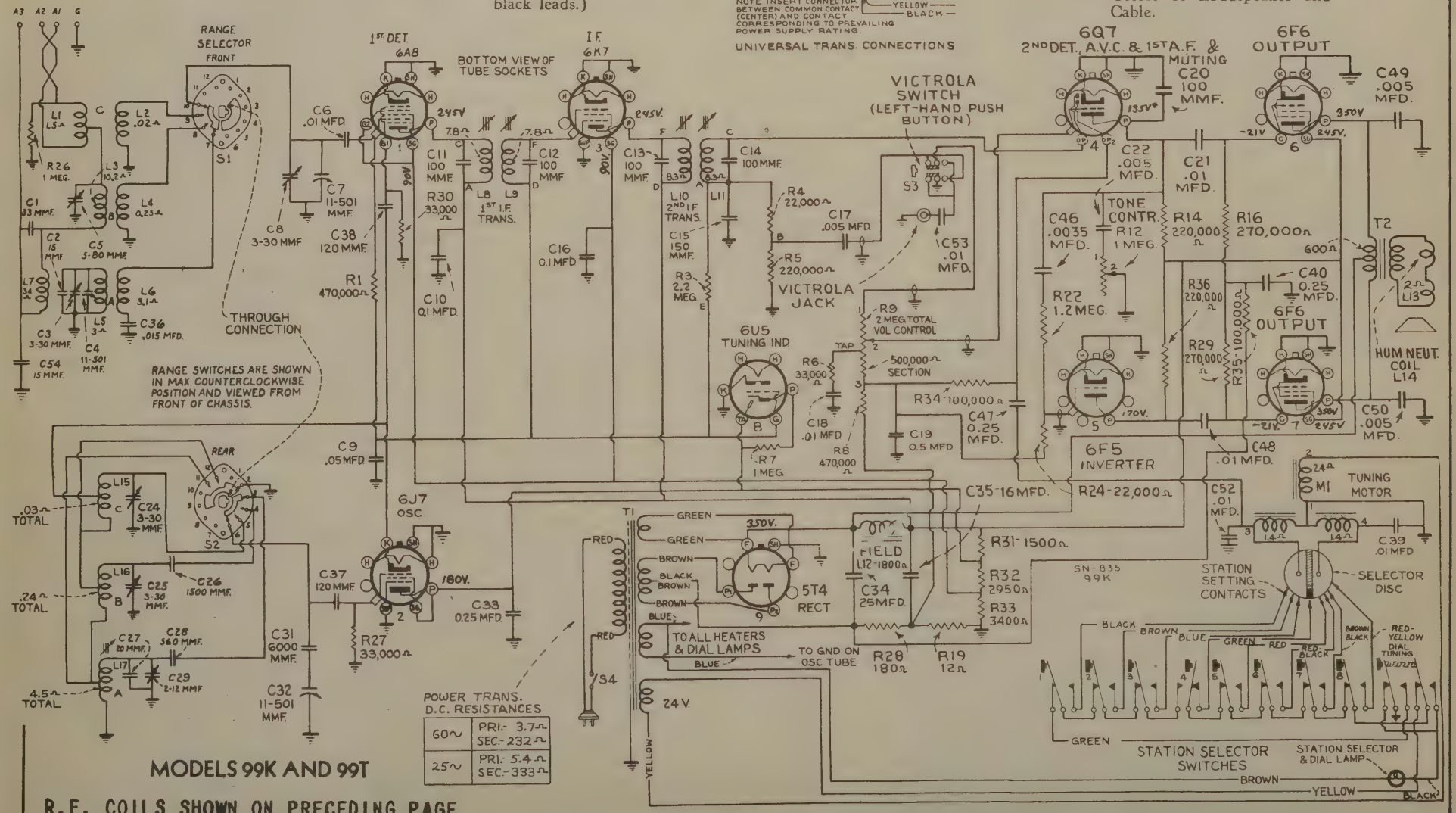



UNIVERSAL TRANS. CONNECTIONS



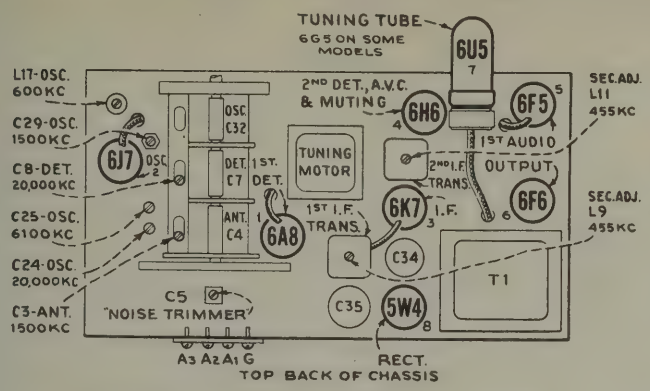

SPEAKER PLUG CONNECTIONS

Above — Connections and Colors of Loudspeaker and Cable.

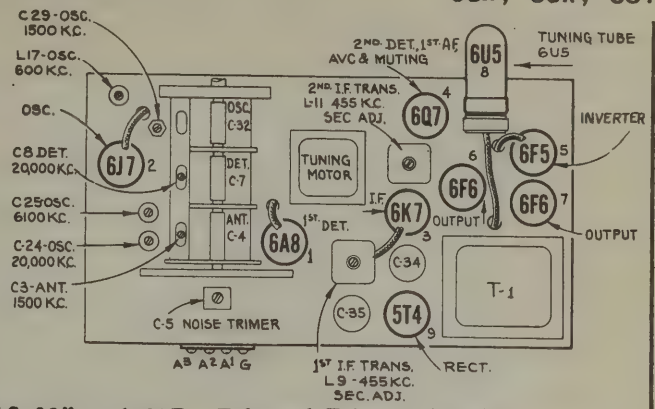


REFER TO INDEX FOR DATA ON ELECTRIC TUNING

98K, 99K, 99T




**MODEL 98K** *Tube and Trimmer Locations*




**MODELS 99K and 99T** *Tube and Trimmer Locations*

**RCA Victor Master Antenna Kit.**—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

**Noise-Reducing Adjustment.** — After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C5, which is mounted behind the antenna terminal board, to a point where this noise is reduced to a minimum.

Adjustment of the noise-reducing trimmer should be made in the customer's home, with the Master Antenna connected to receiver.

**This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer C5 should be screwed all the way down.**

**Other Antennas.**—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

**Precautionary Lead Dress.**—(1) The lead from the left pilot light should be kept behind the bulb and toward the "Magic Eye," to keep it away from the 6F5 grid cap, (2) leads from mica trimmers to coil should be kept away from the coil and other parts, (3) leads on oscillator coil which are an extended part of the coil winding should be as short as possible, (4) "C" band series capacitor C31 must have leads as short as possible, (5) all leads from antenna board to antenna coils should be dressed toward back apron, (6) the one lead of the line cord and the primary lead of the power transformer which run to the power switch should be twisted together, (7) shielding on leads to Victrola switch should be kept away from the switch terminals and jack.

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL 98K** |
| | SAME AS 99K EXCEPT |
| | RECEIVER ASSEMBLIES |
| 4838 | Capacitor—.005 mfd. (C17, C22, C49) |
| 5148 | Capacitor—.007 mfd. (C18) |
| 14393 | Capacitor—.01 mfd. (C6, C21, C39, C52, C53) |
| 11315 | Capacitor—.015 mfd. (C36) |
| 4886 | Capacitor—.05 mfd. (C9) |
| 4839 | Capacitor—0.1 mfd. (C10, C16) |
| 12484 | Capacitor—0.25 mfd. (C33, C40) |
| 30867 | Capacitor—0.5 mfd. (C19) |
| 11203 | Capacitor—10 mfd. (C34) |
| 14600 | Resistor—18 ohms, ½ watt (R19) |
| 31431 | Resistor—220 ohms, wire wound, 1.5 watts (R28) |
| 31430 | Resistor—8,200 ohms, wire wound, 1.5 watts (R24) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 14167 | Resistor—27,000 ohms, 2 watts (R23) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R6, R27, R30) |
| 12010 | Resistor—68,000 ohms, 1/10 watt (R29) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R14) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 11297 | Resistor—330,000 ohms, 1/10 watt (R16) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R1, R8) |
| 31299 | Transformer—Power transformer, 105-120 volts, 25-60 cycle (T1) |
| 31298 | Transformer—Power transformer, 105-120 volts, 50-60 cycle (T1) |
| 31454 | Volume Control (R9) |
| | SPEAKER ASSEMBLIES (RL-70-F3) |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L12) |
| 11469 | Coil—Hum neutralizing coil (L14) |
| 31275 | Cone—Speaker cone and voice coil (L13) |
| 31302 | Plug—4-contact male plug |
| 31300 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31301 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |

**Additional Replacement Parts:** 98K 99K 99T

| Stock No. | |
|---|---|
| 32083 | Screen—Dial color screen and frame, less pointer, carriage, and rods |
| 31312 | Switch—Station selector push-button switch and bracket complete (99T only) |
| 32229 | Switch—Station selector push-button switch and bracket complete (99K only) |

**MODELS 99K and 99T**

| | RECEIVER ASSEMBLIES |
|---|---|
| 31253 | Board—Antenna and ground terminal board |
| 12714 | Capacitor—Adjustable trimmer 2-12 mmfd. (C29) |
| 31292 | Capacitor—Dual adjustable trimmer 3-30 mmfd. each section (C24, C25) |
| 31252 | Capacitor—Adjustable trimmer 5-80 mmfd. (C5) |
| 12896 | Capacitor—15 mmfd. (C2, C54) |
| 12948 | Capacitor—33 mmfd. (C1) |
| 31432 | Capacitor—20 mmfd. (C27) |
| 12720 | Capacitor—100 mmfd. (C20) |
| 31270 | Capacitor—100 mmfd. (C11, C12, C13. C14) |
| 12724 | Capacitor—120 mmfd. (C37, C38) |
| 12725 | Capacitor—150 mmfd. (C15) |
| 31433 | Capacitor—560 mmfd. (C28) |
| 31033 | Capacitor—1,500 mmfd. (C26) |
| 31405 | Capacitor—6,000 mmfd. (C31) |
| 30303 | Capacitor—.0035 mfd. (C46) |
| 4838 | Capacitor—.005 mfd. (C17, C22, C49, C50) |
| 14393 | Capacitor—.01 mfd. (C6, C18, C21, C39, C48, C52, C53) |
| 11315 | Capacitor—.015 mfd. (C36) |
| 30882 | Capacitor—.05 mfd. (C9) |
| 4839 | Capacitor—0.1 mfd. (C10, C16) |
| 30965 | Capacitor—0.25 mfd. (C33, C40, C47) |
| 30867 | Capacitor—0.5 mfd. (C19) |

# REPLACEMENT PARTS (Continued)

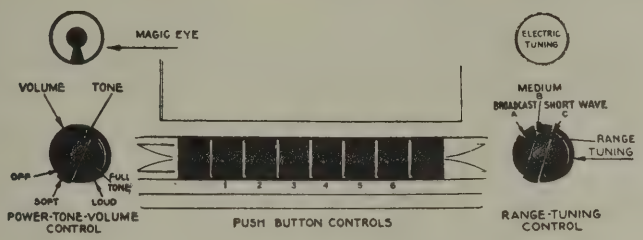
| STOCK No. | DESCRIPTION |
|---|---|
| 5212 | Capacitor—16 mfd. (C35) |
| 14531 | Capacitor—25 mfd. (C34) |
| 31237 | Clutch—Variable condenser drive gear clutch and pinion gear — engages pin on motor shaft (50/60 cycle models only) |
| 31544 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft (25 cycle models only) |
| 31293 | Coil—"A" band antenna coil (L5, L6, L7) |
| 31296 | Coil—"A" band oscillator coil (L17) |
| 31294 | Coil—"B" band antenna coil (L3, L4) |
| 31295 | Coil—"B" and "C" band oscillator coil (L15, L16) |
| 31297 | Coil—"C" band antenna coil (L1, L2) |
| 31290 | Condenser—3-gang variable condenser (C3, C4, C7, C8, C32) |
| 31231 | Contact—Contact tip for station-setting contact |
| 31269 | Core—Adjustable core and stud for i-f transformers |
| 31260 | Core—Adjustable core and stud for "A" band oscillator coil |
| 31273 | Drum—Indicator drive cord drum |
| 31240 | Flywheel—Variable condenser drive motor flywheel |
| 31239 | Gear—Variable condenser knob shaft drive gear and hub |
| 31238 | Gear—Variable condenser intermediate drive gear and pinion gear (50/60 cycle models only) |
| 31545 | Gear—Variable condenser intermediate drive gear and pinion gear (25 cycle models only) |
| 11891 | Lamp—Dial lamp |
| 31480 | Lamp—Electric tuning adjustment indicator lamp |
| 31243 | Leather—Friction leather for flywheel |
| 31246 | Motor—Variable condenser drive motor (M1)—25 cycle models only |
| 31235 | Motor—Variable condenser drive motor (M1)—50/60 cycle models only |
| 31228 | Plate—Station-setting contact plate—less contacts |
| 31227 | Plate—Station-setting contact mounting plate—mounts on rear of variable condenser |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31271 | Pulley—Motor pulley |
| 31272 | Pulley—Range switch pulley |
| 31250 | Resistor—Voltage divider comprising one 1,500 ohm, one 2,950 ohm, one 3,400 ohm, one 12 ohm, and one 180 ohm sections (R19, R28, R31, R32, R33) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R24) |
| 13998 | Resistor—22,000 ohms, ½ watt (R4) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R27, R30) |
| 12454 | Resistor—33,000 ohms, ½ watt (R6) |
| 11281 | Resistor—100,000 ohms, 1/10 watt (R34) |
| 14560 | Resistor—100,000 ohms, ½ watt (R35) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R14, R36) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 11453 | Resistor—270,000 ohms, 1/10 watt (R16, R29) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R1) |
| 12285 | Resistor—470,000 ohms, ½ watt (R8) |
| 12013 | Resistor—1 meg., 1/10 watt (R7, R26) |
| 31056 | Resistor—1.2 meg., 1/10 watt (R22) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R3) |
| 31233 | Rotor—Selector rotor disc—mounts on rear of variable condenser shaft |
| 31241 | Screw—¼ x 20 headless cone point set screw for flywheel |
| 4119 | Screw—No. 8-32 headless set screw for gear Stock No. 31239 |
| 14350 | Screw—No. 8-32 square head set screw for selector rotor disc |
| 4669 | Screw—No. 8-32 square head set screw for pulley Stock Nos. 31271 and 31272, and drum Stock No. 31273 |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31251 | Socket—Radiotron socket |
| 31365 | Socket—Tuning indicator lamp insulated socket |
| 31232 | Spring—Contact tip spring for station-setting contact |
| 12007 | Spring—Retaining spring for core Stock No. 31269 |
| 31262 | Spring—Tension spring for core Stock No. 31260 |
| 31230 | Spring—Station-setting contact body spring |
| 31242 | Spring—Tension spring for flywheel |
| 31236 | Support—Variable condenser drive gear mounting support and studs assembly |
| 31244 | Support—Variable condenser motor mounting support and studs for 50/60 cycle models only |
| 31245 | Support—Variable condenser motor mounting support and studs—for 25 cycle models |
| 31291 | Switch—Range switch (S1, S2) |
| 31248 | Tone Control—H.f. tone control and power switch (R12, S4) |
| 31267 | Transformer—First i-f transformer (L8, L9, C11, C12) |
| 31268 | Transformer—Second i-f transformer (L10, L11, C13, C14) |
| 31308 | Transformer—Power transformer 105-130, 140-160, 200-250 volts, 50-60 cycle (T1) |
| 31226 | Transformer—Power transformer 110 volts, 25-60 cycle (T1) |
| 31225 | Transformer—Power transformer 110 volts, 50-60 cycle (T1) |
| 31450 | Volume Control (R9) |

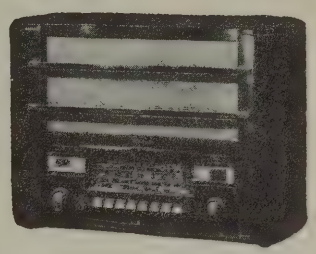
| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (Speaker RL-63-H6) Model 99T** |
| 14356 | Board—3-contact reproducer terminal board |
| 13866 | Cap—Cone center dust cap |
| 11234 | Coil—Field coil (L12) |
| 11469 | Coil—Hum neutralizing coil (L14) |
| 31310 | Cone—Speaker cone and voice coil (L13) |
| 5039 | Plug—4-contact male plug for speaker |
| 31309 | Speaker—Complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **SPEAKER ASSEMBLIES (Speaker RL-70-H2) Model 99K** |
| 13866 | Cap—Dust cap for cone center |
| 11234 | Coil—Field coil (L12) |
| 11469 | Coil—Neutralizing coil (L14) |
| 31275 | Cone—Speaker cone and voice coil (L13) |
| 5039 | Plug—4-contact male plug for speaker |
| 31530 | Speaker—Complete |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **SPEAKER ASSEMBLIES (Speaker RL-70-E2) Model 99K** |
| 13866 | Cap—Dust cap for cone center |
| 11234 | Coil—Field coil (L12) |
| 11469 | Coil—Neutralizing coil (L14) |
| 12667 | Cone—Speaker cone and voice coil (L13) |
| 5039 | Plug—4-contact male plug for speaker |
| 14535 | Speaker—Complete |
| 14358 | Screw—Screws, washers, and lockwashers to hold core in yoke |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31303 | Bracket—Band indicator mounting bracket complete less indicator strip, cord, and tension spring—Model 99K |
| 31276 | Bracket—Band indicator mounting bracket complete less indicator strip, cord, and tension spring—Model 99T |
| 31282 | Bracket—Magic Eye mounting bracket and holder |
| 31358 | Button—Station selector push button |
| 31345 | Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip |
| 31344 | Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip |
| 31278 | Cord—Band indicator drive cord |
| 31281 | Cord—Indicator pointer drive cord |
| 31283 | Cord—Variable condenser drum drive cord |
| 31456 | Cover—8 protective covers for push button markers |
| 31359 | Cushion—Station selector push button rubber cushion |
| 31451 | Dial—Station selector dial scale and crystal |
| 31356 | Escutcheon—Station selector dial escutcheon—less dial scale and push buttons—Model 99K |
| 31361 | Escutcheon—Station selector dial escutcheon—less dial scale and push buttons—Model 99T |
| 31304 | Indicator—Band indicator strip |
| 31305 | Indicator—Station selector indicator pointer |
| 31355 | Knob—Range switch, volume control, tone control, or station selector knob |
| 31346 | Lock—Push button switch lock plate—comprising 10 contact locks in one strip |
| 31589 | Markers—Station call letter markers for push buttons |
| 31457 | Marker—"Record Player" marker for push button |
| 31458 | Marker—"Dial Tuning" marker for push button |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 14887 | Retainer—Indicator pointer drive cord pulley retainer |
| 11210 | Screw—Chassis mounting screws, washers, and lockwashers for one chassis |
| 3993 | Screw—No. 6-32 square head set screw for pointer slide stop |
| 31287 | Shaft—Indicator pointer slide shaft |
| 31347 | Socket—Pickup socket and bracket |
| 31279 | Spring—Band indicator tension spring |
| 13638 | Spring—Indicator pointer drive cord tension spring |
| 31418 | Spring—Variable condenser drum drive-cord tension spring |
| 14270 | Spring—Retaining spring for knob Stock No. 31355 |
| 31970 | Spring—Tension spring for push button switch latch bar |
| 31307 | Stop—Indicator pointer slide stop |
| 31360 | Switch—Pickup switch for mounting on push button switch assembly (S3) |

# MODEL 98T2

## Chassis No. RC-352D

## Eight-Tube, Three-Band, AC-DC, Superheterodyne Receiver



## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast ("A" band) | 540-1,720 kc |
| Medium Wave ("B" band) | 2.3-7.0 mc |
| Short Wave ("C" band) | 7.0-22 mc |

INTERMEDIATE FREQUENCY ..... 455 kc

Six Electric Tuning Positions

2 stations between approximately 550- 950 kc
2 stations between approximately 690-1,225 kc
2 stations between approximately 890-1,500 kc

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6K8 | First-Detector—Oscillator |
| (2) RCA-6K7 | Intermediate-Frequency Amplifier |
| (3) RCA-6H6 | Second-Detector and A.V.C. |
| (4) RCA-6J7 | Audio Voltage Amplifier |
| (5) RCA-25L6 | Audio Power Amplifier |
| (6) RCA-25Z6 | Half-Wave Rectifier |
| (7) RCA-6U5 | Tuning Tube |
| (8) RCA Stock No. 31577 | Ballast Tube |

Pilot Lamps ..... Mazda 47, 6.3 volts, .15 amp.

POWER OUTPUT

| | |
|---|---|
| Undistorted | 1.5 watts |
| Maximum | 2.5 watts |

POWER SUPPLY RATING

| | |
|---|---|
| A-C Rating | 105-125 volts, 25-60 cycles, 55 watts |
| D-C Rating | 105-125 volts, 55 watts |

LOUDSPEAKER (PERMANENT-MAGNET DYNAMIC)

| | |
|---|---|
| Diameter | 6 inches |
| V. C. Impedance at 400 cycles | 3 ohms |

| Dimensions | Height | Width | Depth |
|---|---|---|---|
| Cabinet | 12⅜ in. | 18⅜ in. | 9⅜ in. |
| Chassis Base | 2½ in. | 13 in. | 6½ in. |
| Over-all Chassis Height | | | 6 in. |
| Tuning Drive Ratio | | | 12 to 1 |
| Shipping Weight (approx.) | | | 25 lbs. |

## Miscellaneous Service Notes

**Bias Cell.**—The bias cell provides approximately 1-volt bias for the 1st audio grid. The cell should never be shorted, not measured with an ordinary voltmeter or other device that draws current. The cell may be checked by measuring the 1st-audio cathode current with a new tested 6J7 tube in this socket. The current should be approximately ½ milliampere. If it is appreciably greater than ½ mil., install a new bias cell.

**Victrola Attachment.**—Two screw-type terminals, numbered 1 and 2, are provided on the rear apron of the chassis for connection to a Victrola Attachment, such as the R-93, R-93B, etc. *(When A-C supply is available.)*

**Care must be taken that these terminals are never connected in any way to the chassis, otherwise injury will result to the bias cell. To safeguard against this possibility, the following precautions should be observed in connecting the Victrola Attachment to the receiver.**

**Victrola Attachment with shielded cable.**—If the shielded cable has a plug connector, remove the plug, connect the shielding to terminal 1, and connect the lead (inside the shielding) to terminal 2. Tape the shielding for a sufficient distance to prevent the possibility of it shorting against the chassis.

**Victrola Attachment with twisted-pair cable.**—Connect the low-side of the Attachment to terminal No. 1, and the high-side of the Attachment to terminal No. 2. (In some Attachments, the lead from the low-side is black, and the lead from the high-side is black-brown.)

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the position of the plug. For operation on a-c, a similar reversal of the plug may reduce hum.

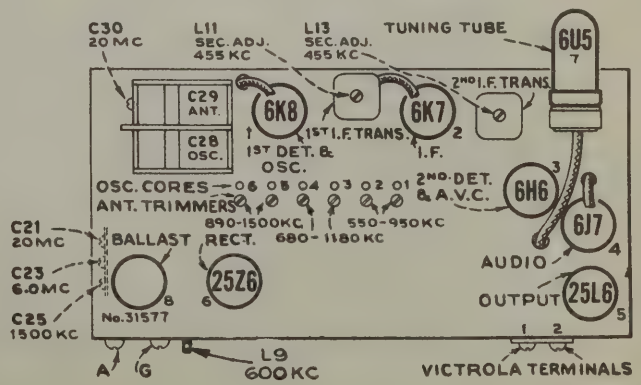
**Precautionary Lead Dress.—**

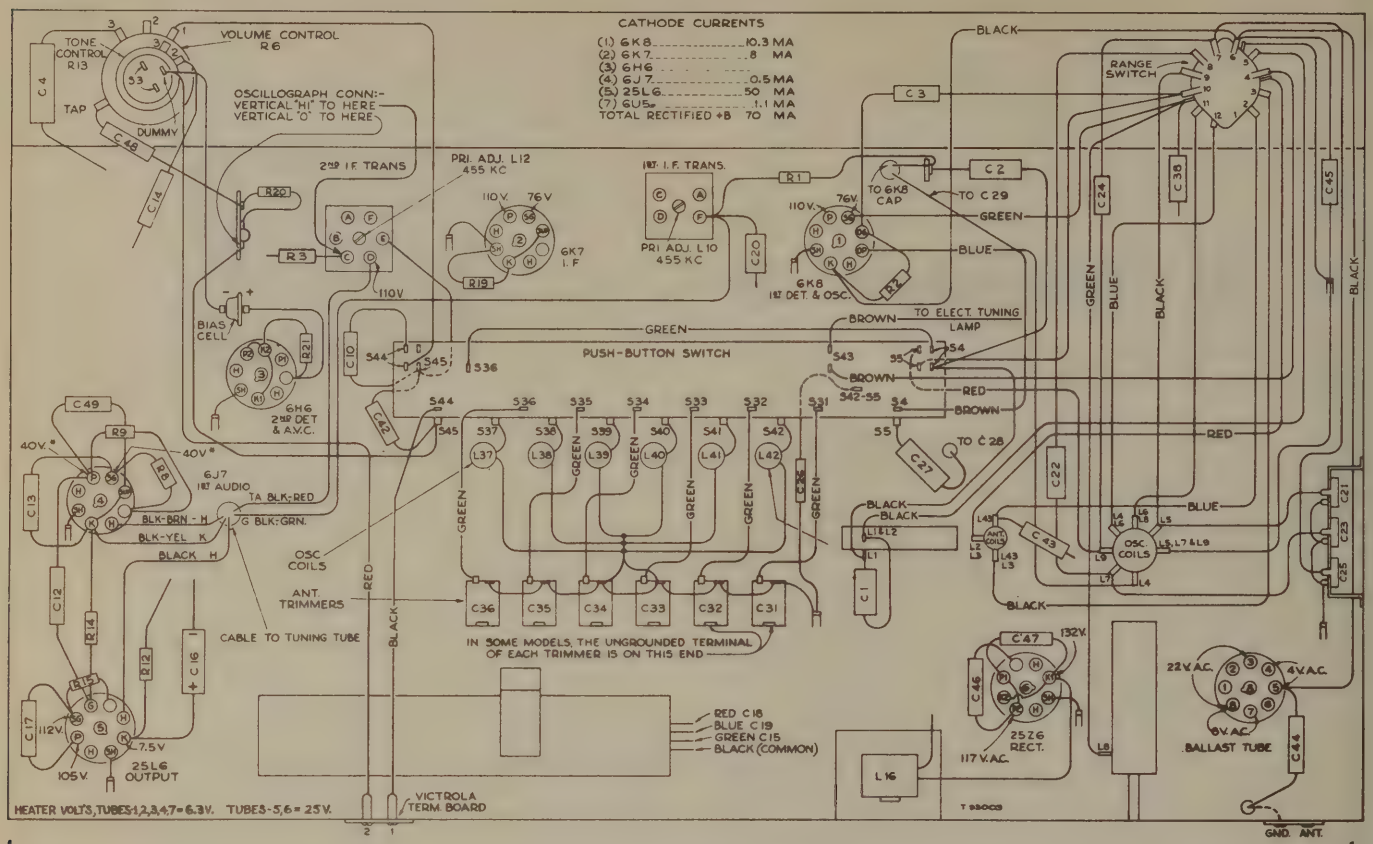
1. Dress the bias cell clear of all bus leads.
2. Leads from S43 must be dressed in front of range switch.
3. Blue lead from range switch to L5 must be short and clear of other leads.
4. Dress leads away from antenna and oscillator coils.
5. Leads across back of chassis must be dressed under electrolytic to prevent approaching Victrola jack.
6. Green lead from range switch to rear contact on oscillator coil must be dressed close to base.

**REFER TO MODEL 98K2**

PAGE 409C

**FOR ALIGNMENT PROCEDURE**

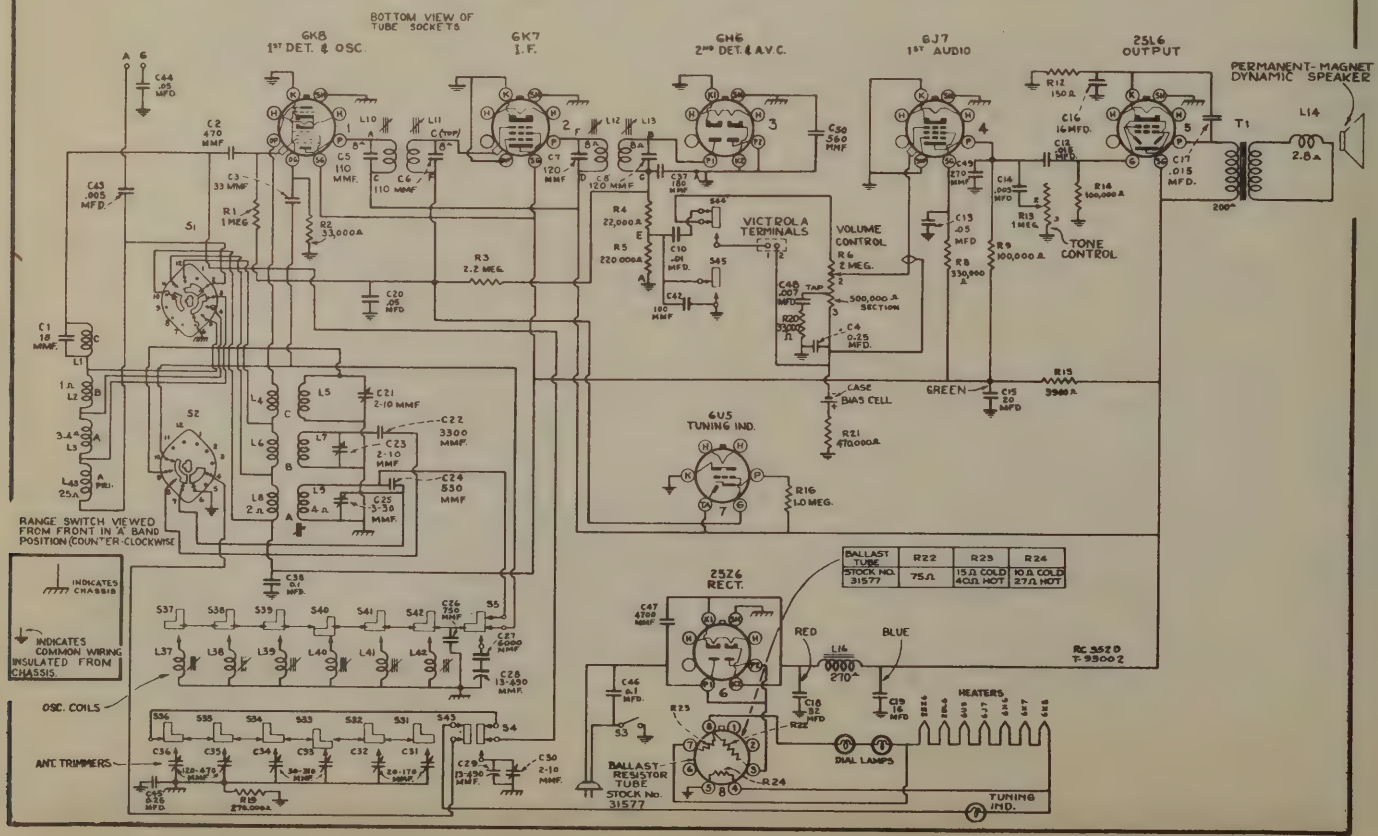




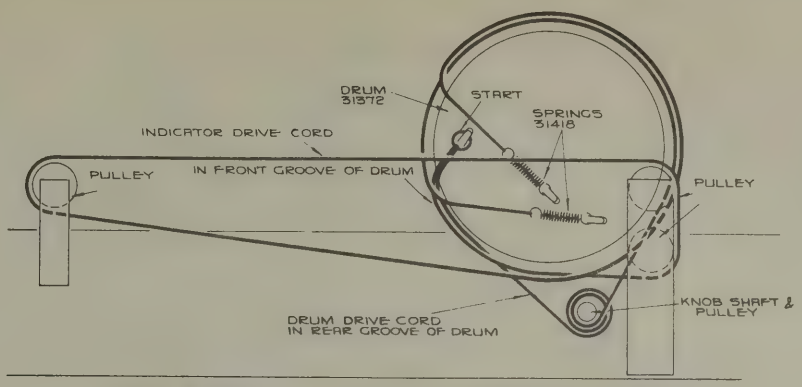

## *R-F Wiring Diagram and Socket Voltages*

Measurements made to low-side of tone control unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply. On d-c, voltages are approximately 10% lower, except heaters, which remain the same.

* **NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.




| BALLAST TUBE STOCK NO. | R22 | R23 | R24 |
|---|---|---|---|
| 31577 | 75 Ω | 15 Ω COLD 40 Ω HOT | 10 Ω COLD 27 Ω HOT |




DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 31577 | Ballast—Ballast resistor tube (R22, R23, R24) |
| 31767 | Board—Antenna-ground terminal board |
| 31579 | Board—Phonograph terminal board |
| 30752 | Bracket—Bracket for holding Magic Eye tube |
| 14338 | Bushing—Variable condenser mounting bushing and screws |
| 30766 | Cap—Cap for Magic Eye |
| 31400 | Capacitor—Adjustable trimmer capacitor, two sections 2-10 mmfd. and one section 3-30 mmfd. (C21, C23, C25) |
| 32486 | Capacitor—Antenna coil trimmer capacitor bank —20-470 mmfd. (C31, C32, C33, C34, C35, C36) |
| 12948 | Capacitor—33 mmfd. (C3) |
| 12722 | Capacitor—18 mmfd. (C1) |
| 12720 | Capacitor—100 mmfd. (C42) |
| 14262 | Capacitor—109 mmfd. (C5, C6) |
| 12404 | Capacitor—120 mmfd. (C7, C8) |
| 14712 | Capacitor—180 mmfd. (C37) |
| 12488 | Capacitor—270 mmfd. (C49) |
| 30433 | Capacitor—470 mmfd. (C2) |
| 32492 | Capacitor—530 mmfd. (C24) |
| 12537 | Capacitor—560 mmfd. (C50) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 4881 | Capacitor—3,300 mmfd. (C22) |
| 12897 | Capacitor—4,700 mmfd. (C47) |
| 31405 | Capacitor—6,000 mmfd. (C27) |
| 5148 | Capacitor—.007 mfd. (C48) |
| 4838 | Capacitor—.005 mfd. (C14, C43) |
| 14393 | Capacitor—.01 mfd. (C10) |
| 11315 | Capacitor—.015 mfd. (C12, C17) |
| 4886 | Capacitor—.05 mfd. (C13, C20, C44) |
| 4839 | Capacitor—0.1 mfd. (C38, C46) |
| 12484 | Capacitor—0.25 mfd. (C4, C45) |
| 31323 | Capacitor—16 mfd. (C16) |
| 31576 | Capacitor—Comprising one 32 mfd., one 20 mfd., and one 16 mfd. section (C15, C18, C19) |
| 31581 | Cell—Bias cell |
| 31382 | Clip—Mounting clip for coils and cores on oscillator bank |
| 32493 | Coil—Antenna coil (L1, L2, L3, L43) |
| 31951 | Coil—Oscillator coil (L4, L5, L6, L7, L8, L9, C24) |
| 31385 | Coil—Push button oscillator coil (L37, L38) |
| 32487 | Coil—Push button oscillator coil (L39, L40) |
| 31383 | Coil—Push button oscillator coil (L41, L42) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 5119 | Connector—3-contact female connector plug for reproducer cable |
| 32668 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 32634 | Cord—Drum drive cord |
| 32635 | Cord—Indicator pointer drive cord |
| 31386 | Core—Adjustable core and stud assembly for oscillator bank |
| 12800 | Core—Adjustable core and stud for oscillator coil, Stock No. 31951 |
| 31372 | Drum—Variable condenser drive cord drum and calibrator |
| 31580 | Holder—Bias cell holder |
| 32552 | Indicator—Dial pointer |
| 31480 | Lamp—Dial lamp (Mazda No. 47) |
| 32670 | Plate—Dial color plate, pointer slide, and lamp brackets assembled |
| 31373 | Pulley—Drive cord pulley |
| 5066 | Reactor (L16) |
| 31577 | Resistor—Ballast resistor (R22, R23, R24) |
| 30880 | Resistor—150 ohms, ½ watt (R12) |
| 30694 | Resistor— 3,900 ohms, ½ watt (R15) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2, R20) |
| 14560 | Resistor—100,000 ohms, ½ watt (R9, R14) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R19) |
| 14983 | Resistor—330,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R21) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12013 | Resistor—1 meg., 1/10 watt (R16) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Drive cord pulley retainer |
| 14887 | Retainer—Retainer for drive cord pulley |
| 4669 | Screw—No. 8-32 square head set screw for drum, Stock No. 31372 |
| 32671 | Shaft—Station selector knob shaft and pulley |
| 12110 | Shield—Radiotron shield cap |
| 31365 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31251 | Socket—Tube socket |
| 31970 | Spring—Tension spring for station selector push button switch latch bar |
| 31418 | Spring—Indicator or drum drive cord tension spring |
| 31370 | Switch—Push button selector switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 33009 | Switch—Range switch (S1, S2) |
| 14376 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 14283 | Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5) |
| 31577 | Tube—Ballast resistor tube (R22, R23, R24) |
| | **SPEAKER ASSEMBLIES (84307-1)** |
| 31665 | Cone—Speaker cone and voice coil (L14) |
| 5118 | Plug—3-contact male plug for speaker |
| 31664 | Speaker complete |
| 31666 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31397 | Button—Station selector push button |
| 31456 | Cover — 8-protective covers for push button markers |
| 32673 | Dial—Station selector dial scale (glass) |
| 32674 | Escutcheon—Station selector escutcheon less dial scale and push buttons |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31458 | Marker—"Dial Tuning" push button marker |
| 31457 | Marker—"Record Player" push button marker |
| 31589 | Marker—Station call letters push button markers |
| 4982 | Spring—Retaining spring for knob, Stock No. 14359 |
| 30330 | Spring—Retaining spring for knob, Stock No. 31391 |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 30773 and 31355 |

# MODEL R-98 Five-Tube, A-C, Electric Victrola (Phono. only)

## Chassis No. RS-77

## Electrical and Mechanical Specifications

RCA Tube Complement

(1) RCA-6J5 ..... 1st Audio Amplifier
(2) RCA-6J5 ..... 2nd Audio Amplifier
(3) RCA-2A3 ..... Power Output
(4) RCA-2A3 ..... Power Output
(5) RCA-5U4-G ..... Rectifier

Power Supply Rating

A ..... 105-125 volts, 50-60 cycles, 175 watts
A-6 ..... 105-125 volts, 60 cycles, 175 watts

Power Output

Undistorted ..... 12 watts
Maximum ..... 13.5 watts

Loudspeaker

Type ..... Eight-Inch Electrodynamic
Voice Coil Impedance ..... 1.3 ohms at 400 cycles

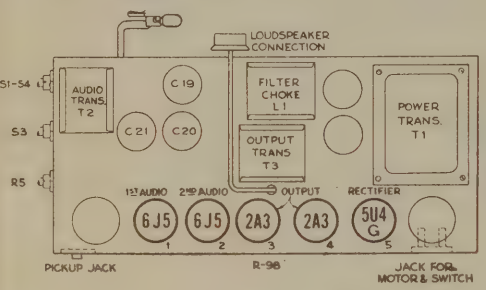
Motor Board

Motor ..... Self-starting Induction
Turntable Speed ..... 78 r.p.m. (adjustable)

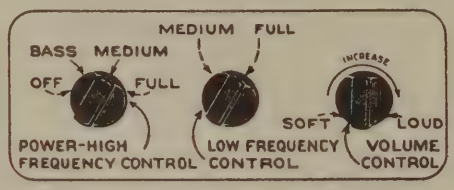
Pickup

Type ..... Crystal
Impedance ..... 100,000 ohms at 1,000 cycles

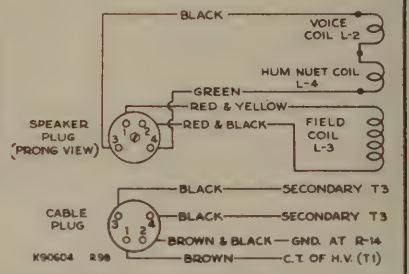
| | | | | | |
|---|---|---|---|---|---|
| Cabinet Dimension | Height 14¼ inches | Width | 19¾ inches | Depth | 14 inches |
| Chassis Base Dimensions | Height 2¾ inches | Width | 16¼ inches | Depth | 7¾ inches |
| Weight (Shipping) | 54 pounds | Weight (Net) | | | 47½ pounds |




*Top View, Showing Location of Parts*




*Location of Controls*

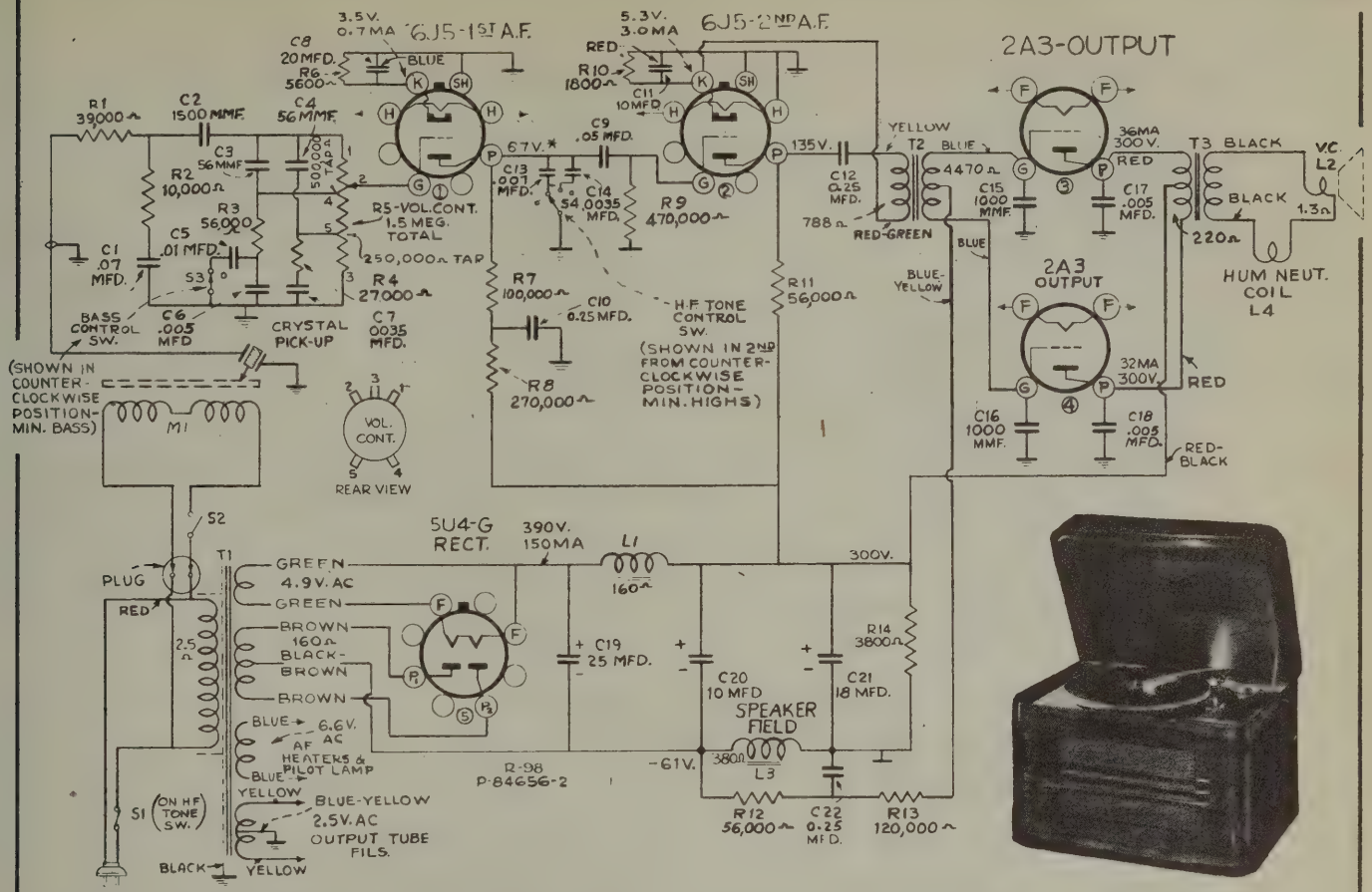



*Connections of Loudspeaker and Cable*

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

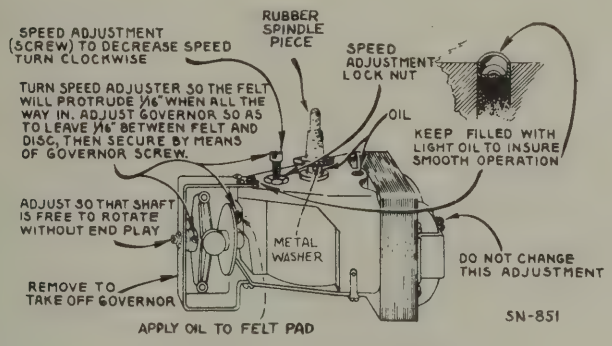
| STOCK No. | DESCRIPTION |
|---|---|
| | **AMPLIFIER ASSEMBLIES** |
| 12723 | Capacitor—56 mmfd. (C3, C4) |
| 12635 | Capacitor—1,000 mmfd. (C15, C16) |
| 31033 | Capacitor—1,500 mmfd. (C2) |
| 30303 | Capacitor—.0035 mfd. (C7, C14) |
| 4838 | Capacitor—.005 mfd. (C6, C17, C18) |
| 5148 | Capacitor—.007 mfd. (C13) |
| 4937 | Capacitor—.01 mfd. (C5) |
| 32787 | Capacitor—.05 mfd. (C9) |
| 14626 | Capacitor—.07 mfd. (C1) |
| 12484 | Capacitor—0.25 mfd. (C10, C12, C22) |
| 11203 | Capacitor—Electrolytic, 10 mfd (C20) |
| 14273 | Capacitor—Electrolytic, one 10 mfd., and one 20 mfd. sections (C8, C11) |
| 11496 | Capacitor—Electrolytic, 18 mfd. (C21) |
| 14531 | Capacitor—Electrolytic, 25 mfd. (C19) |
| 33396 | Control—H.F. tone control and switch (S1, S4) |
| 33397 | Control—L.F. tone control (S3) |
| 5040 | Plug—Speaker cable plug |
| 12466 | Reactor—Filter reactor (L1) |
| 12194 | Resistor—1,800 ohms, ½ watt (R10) |
| 33482 | Resistor—voltage divider, 3,800 ohms (R14) |
| 13714 | Resistor—5,600 ohms, ½ watt (R6) |
| 14559 | Resistor—10,000 ohms, ½ watt (R2) |
| 12738 | Resistor—27,000 ohms, ½ watt (R4) |
| 12266 | Resistor—39,000 ohms, ½ watt (R1) |
| 12286 | Resistor—56,000 ohms, ½ watt (R12) (R3) |
| 17440 | Resistor—56.000 ohms, 1 watt (R11) |
| 14560 | Resistor—100,000 ohms, ½ watt (R7) |
| 13734 | Resistor—120,000 ohms, ½ watt (R13) |
| 12199 | Resistor—270,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9) |
| 4794 | Socket—Tube socket—4-prong |
| 32537 | Socket—Tube socket—8-prong |
| 14275 | Socket—2 contact female for motor power |
| 14274 | Socket—2 contact female for pickup input |
| 13964 | Transformer—Driver transformer (T2) |
| 33405 | Transformer—Output transformer (T3) |
| 14271 | Transformer—Power transformer, 105-120 volts, 50-60 cycles |
| 33398 | Volume Control (R5) |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33399 | Arm—Pickup arm less crystal cartridge, cable, and base and pivot arm |
| 33400 | Base—Pickup arm base and pivot shaft |
| 32885 | Cable—Pickup arm cable and plug |
| 31156 | Crystal—Pickup crystal cartridge and screw |
| 31160 | Screw—Pickup needle screw |
| | **MOTOR ASSEMBLIES** |
| 31617 | Bracket—Governor end bearing bracket less bearing screw for 50 and 50-60 cycle motors |
| 31619 | Coil—Field coils and laminations for 50-60 cycle motor |
| 31618 | Coil—Field coils and laminations for 60 cycle motor |
| 11703 | Governor—Governor complete for 50-60 cycle motor |
| 31623 | Governor—Governor complete for 60 cycle motor |
| 31462 | Motor—105-125 volts, 50-60 cycle |
| 31616 | Screw—Rotor bearing screw and nut for 60 and 50-60 cycle motor |
| 31620 | Screw—Speed regulator screw and nut for 60 and 50-60 cycle motor |
| 31621 | Shaft—Turntable spindle and gear for 60 and 50-60 cycle motor |
| 31622 | Washer—one felt and one metal thrust washer for turntable spindle |
| 32914 | Weight—Governor weight and spring for 50-60 cycle motor |
| 32912 | Weight—Governor weight and spring for 60 cycle motor |
| | **AUTOMATIC SWITCH ASSEMBLIES** |
| 32863 | Cam—Cam assembly comprising main and auxiliary cams, hub, and set screws |
| 32864 | Lever—Actuating lever with roller and mercury tube clip |
| 14195 | Screw—No. 10-32 x 5/16 cone pointer set screw for cam hub |
| 32869 | Screw—No. 10-32 x 5/16 set screw for cam hub |
| 32868 | Spring—Actuating lever tension spring |
| 32867 | Spring—Cam tension spring |
| 32865 | Support—Switch support and terminal board |
| 32866 | Switch—Mercury tube with leads (S2) |
| 31608 | Washer—"C" washer for actuating lever shaft. |
| | **SPEAKER ASSEMBLIES (84613-1)** |
| 33648 | Cone—Cone assembled with voice coil, center suspension and rim gasket |
| 5039 | Plug—4-prong male connector for reproducer |
| 33490 | Speaker complete (No Output Transformer) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 13103 | Cap—Pilot lamp bullseye |
| 33403 | Cup—New needle cup |
| 9848 | Cup—Used needle cup and pickup arm support |
| 31464 | Damper—Turntable damper sleeve and plate |
| 11771 | Foot—Cabinet foot |
| 13085 | Hinge—Cabinet lid hinge |
| 31355 | Knob—Volume control, or tone control knob |
| 33402 | Mounting—Motor mounting screws, washers, and spacers |
| 14805 | Plug—Plug for motor leads |
| 31155 | Spring—Coil spring for used needle cup lid |
| 14270 | Spring—Retaining spring for knobs |
| 31164 | Support—Cabinet lid support |



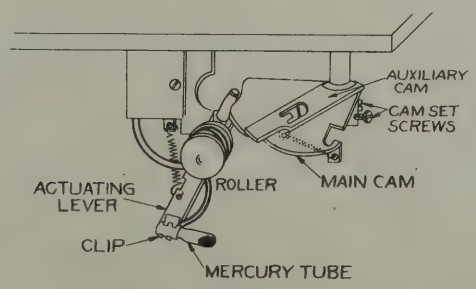



* **NOTE:** Values with star are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.


SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
RUBBER SPINDLE PIECE
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
METAL WASHER
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
APPLY OIL TO FELT PAD
SN-851

*Motor Lubrication and Adjustments*




*Mercury Switch Assembly*
(Shown with pickup in rest position)

Adjust main cam so that switch trips into the "off" position when needle is 1¾ inches from the center line of motor spindle.

**Motor Revision:**

The governor motor Stock No. 31461 originally specified on Model R-98 is no longer used, and is replaced by the following:

I—Motor Stock No. 32135—60-cycle, non-governed constant speed type (same as used in U-115).

II—Mounting Adaptor Kit Stock No. 35735—for Stock No. 32135—containing:

(a) 1—Motor mounting adaptor plate.
(b) 3—Screws for mounting plate to motor.
(c) 3—Screws for mounting plate to motor-board.
(d) 3—Spacers for separating plate from motor.
(e) 3—Washers for motor mounting screws.

To install, assemble plate (a) to motor No. 32135 using spacers and screws provided. Mount motor and plate assembly to motor-board of cabinet, using the original flexible mounting grommets and eyelets. If necessary, shift motor or chassis slightly to give clearance between the two. Remove plug from leads of original motor and attach same to leads of new motor.

**Hum at Maximum Volume:**

Wherever excessive hum is apparent, the dress of the pilot lamp lead should be checked. It should be positioned to the rear of the chassis base, well away from the audio circuits.

**Additional Replacement Parts:**

| Stock No. | |
|---|---|
| 33401 | Turntable—12-inch diameter..... |
| 33404 | Turntable—10-inch diameter..... |

# MODEL V-100

## Chassis No. RC-517

## Five-Tube, Single-Band, A-C, Superheterodyne Radio & Phonograph

### Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,650 kc

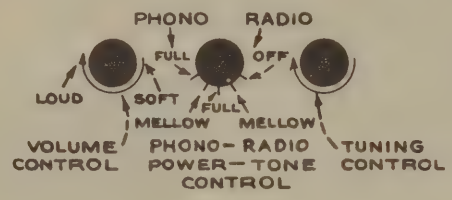
INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st Det.—Osc.
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd Det., A.V.C., and A-F Amplifier
(4) RCA-50L6-GT ..... Power Output
(5) RCA-35Z5-GT ..... Rectifier

POWER OUTPUT

Undistorted ..... 0.9 watts
Maximum ..... 1.2 watts




PILOT LAMP ..... 1—Mazda No. 51, 6-8 volts, 0.2 amps.

POWER SUPPLY RATING

105-125 volts, 50 cycles ..... 55 watts
105-125 volts, 60 cycles ..... 55 watts

LOUDSPEAKER (RL-81A-4)

Type ..... 5-inch permanent-magnet dynamic
V.C. Impedance ..... 4 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 10 15/16 | 16 9/16 | 13 11/32 |
| Weight (net) | | | 19 lbs. |
| Shipping | | | 23 lbs. |
| Tuning Drive Ratio | | | 9:1 |

**Phonograph Motor Service Data:—**

The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

The motor should be lubricated once or twice a year by placing a few drops of S. A. E. 20 (or equivalent) on the turntable spindle and saturating the oil retaining felt pads on the motor shaft with S. A. E. 10 oil. Caution—The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.

Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on d.c., as this would damage the motor.

### Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

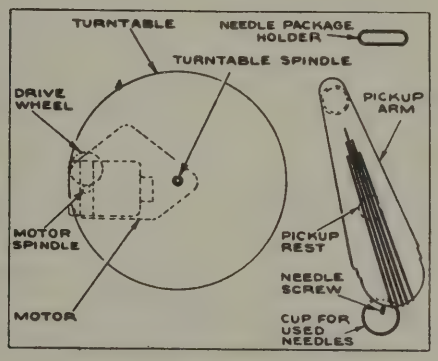
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-517)** |
| 35332 | Can—Shield can for I-F transformer Stock No. 36432 |
| 35097 | Can—Shield can for I-F transformer Stock No. 35088 |
| 12720 | Capacitor—100 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 12952 | Capacitor—330 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 30938 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 34505 | Capacitor—0.2 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 35673 | Capacitor—Electrolytic comprising 1 section of 30 mfd., and 1 section of 50 mfd. |
| 35571 | Coil—Oscillator coil |
| 36285 | Condenser—Variable tuning condenser |
| 36287 | Control—Volume control |
| 32634 | Cord—Drive cord |
| 36293 | Dial—Dial scale |
| 36291 | Indicator—Station selector indicator |
| 36289 | Loop—Antenna loop |
| 36286 | Plate—Dial plate and support—less dial |
| 30868 | Plug—2 contact female plug for motor cable |
| 30189 | Resistor—120 ohms, ½ watt |
| 3153 | Resistor—1,500 ohms, 1 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 36290 | Shaft—Tuning shaft |
| 36292 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31319 | Socket—Tube socket—moulded for 12SA7 tube |
| 30585 | Spring—Drive cord spring |
| 35098 | Spring—Used to hold I-F transformers in shield cans |
| 36288 | Switch—Phono., tone control, and power switch |
| 35088 | Transformer—First I-F transformer—less shield can |
| 36432 | Transformer—Second I-F transformer—less shield can |
| 35666 | Transformer—Output transformer |
| 33726 | Washer—"C" washer for tuning shaft |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33591 | Arm—Pickup arm only—less cartridge, base and cable |
| 34481 | Arm—Pickup pivot arm and shaft |
| 34482 | Base—Pickup mounting base |
| 34758 | Bushing—Rubber bushing and metal bushing for pickup pivot arm shaft |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 34311 | Ring—Retaining ring for pivot shaft |
| 33529 | Screw—Needle screw |
| | **MOTOR ASSEMBLIES** |
| 36402 | Arm—Idler arm and stud |
| 20134 | Ball—Steel ball |
| 36404 | Motor—105-125 volts, 60 cycle motor |
| 36403 | Mounting—One set of motor mounting grommets, spacers and washers |
| 36406 | Plate—Idler arm guide plate |
| 36401 | Plate—Motor plate complete with bearing and ball |
| 30340 | Retainer—Motor fan retainer |
| 30585 | Spring—Idler arm tension spring |
| 36399 | Turntable—Turntable and bushing complete with spindle |
| 33726 | Washer—"C" washer for idler wheel |
| 36405 | Washer—Flat washer for idler wheel |
| 36274 | Wheel—Idler wheel and bearing |
| 37215 | Motor—50 cycle, 105-125 volts |
| | **SPEAKER ASSEMBLIES (RL-81A-4)** |
| 32907 | Cap—Dust cap |
| 36295 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36304 | Crystal—Dial scale crystal |
| 37933 | Cup—Used needle cup |
| 36384 | Decalcomania—Control panel decal |
| 36386 | Decalcomania—"His Master's Voice" decal |
| 11771 | Foot—Rubber foot |
| 13085 | Hinge—Cabinet lid hinge |
| 36297 | Knob—Tone control, power switch and phono. switch knob |
| 36298 | Knob—Volume control or tuning knob |
| 36305 | Mounting—One set of mounting hardware for motor |
| 36303 | Mounting—One set of mounting hardware for pickup arm |
| 30870 | Plug—2 prong male plug for motor leads |
| 36246 | Receptacle—Needle book receptacle |
| 32610 | Rest—Rubber pickup rest |
| 30900 | Spring—Retaining spring for knobs Stock Nos. 36297 and 36298 |
| 31164 | Support—Lid support |

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | 12SK7 I-F grid in series with 0.1 mfd. | 455 kc | Quiet Point 1,500 kc end of dial | C29, C28 2nd I-F transformer |
| 2 | 12SA7—1st. det. grid in series with 0.1 mfd. | | | C27, C26 1st I-F transformer |
| 3 | Radiation Loop | 1,500 kc | 1,500 kc | C25 (osc.) |
| 4 | Radiation Loop | 1,300 kc | signal frequency | C23 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |



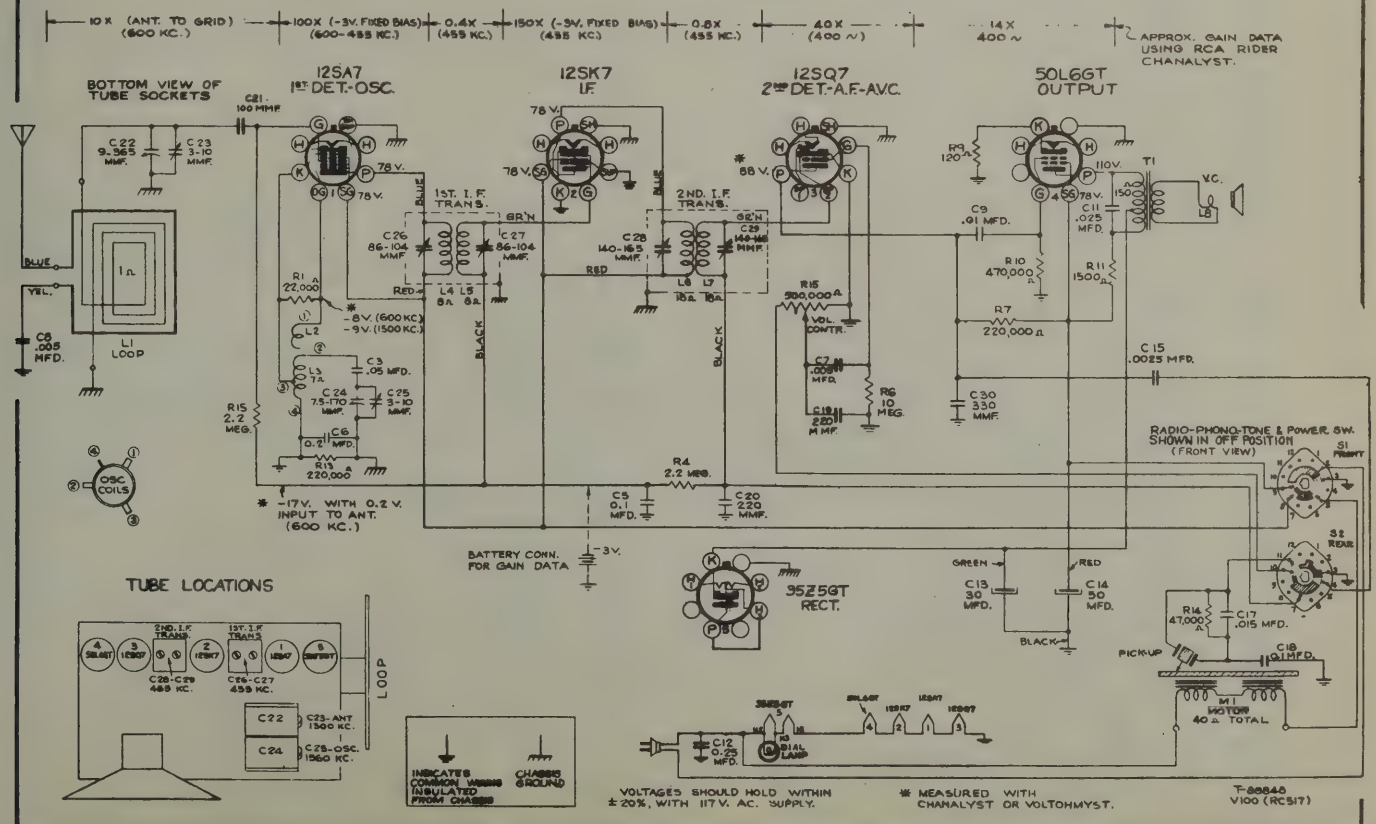

### Cabinet Repair:

Cabinets of the V-100 which are coded with the number "34" stamped into the wood are finished with Du Pont "Dulux." Where necessary to refinish, proceed as follows:

(a) Thoroughly sand the section that is to be refinished with 4/0 sandpaper.
(b) Spray a coat of Du Pont Regular Flat Patching Lacquer No. 1304 on the surface and allow to dry for three or four hours.
(c) Restore original appearance by steel wooling and waxing.

### Phono Compensation Change:

Capacitor C17 across the pickup is changed from .015 to .01 mfd., Stock No. 4937.



# MODEL V-101 Six-Tube, Broadcast-Band, A-C, Radio & Phonograph

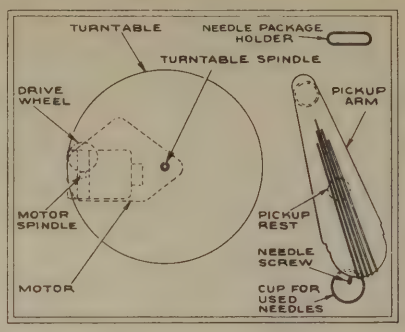
## Chassis No. RC-540

**Phonograph Motor Service Data.—**

The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

The motor should be lubricated once or twice a year by placing a few drops of S. A. E. 20 oil (or equivalent) on the turntable spindle and saturating the oil retaining felt pads on the motor shaft with S. A. E. 10 oil. **Caution—The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.**

**IMPORTANT.—DO NOT PLUG CHASSIS INTO A DC POWER SUPPLY.**




## Electrical and Mechanical Specifications

**Frequency Range**

Standard Broadcast and one Police Band ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

**Tube Complement**

(1) RCA-6SA7 ..... 1st Det.—Osc.
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... 2nd Det., A.V.C., and A-F Amplifier
(4) RCA-25L6-GT ..... Power Output
(5) RCA-35Z5-GT ..... Rectifier
(6) RCA-35Z5-GT ..... Rectifier
Ballast Resistor ..... M-86892-11

**Power Output**

Undistorted ..... 3.5 watts
Maximum ..... 5.0 watts
Pilot Lamp ..... 1—Mazda No. 51, 6-8 volts, 0.2 amps.

**Power Supply Rating**

105-125 volts, 50 cycles ..... 70 watts total
105-125 volts, 60 cycles ..... 70 watts total

**Loudspeaker (RL-79-B4)**

Type ..... 6-inch permanent-magnet dynamic
V.C. Impedance ..... 3.4 ohms at 400 cycles

**Phono Mechanism** ..... { Self-starting motor / Edge-driven turntable

Motor Consumption ..... 22 watts
Pickup ..... Crystal
Pickup Impedance ..... 0.1 meg. at 1,000 cycles

**Cabinet Dimensions**

12 in. high ..... 18½ in. wide ..... 14 in. deep
Tuning Drive Ratio ..... 14 to 1
Net Weight ..... 22½ lbs.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-540)** |
| 37847 | Ballast—Ballast tube resistor |
| 36239 | Board—Terminal and receptacle board |
| 34699 | Capacitor—100 mmfd., mica |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 34700 | Capacitor—120 mmfd |
| 13003 | Capacitor—180 mmfd |
| 14498 | Capacitor—680 mmfd |
| 34459 | Capacitor—.0025 mfd |
| 33584 | Capacitor—.005 mfd |
| 4937 | Capacitor—.01 mfd |
| 11315 | Capacitor—.015 mfd |
| 4870 | Capacitor—.025 mfd |
| 5196 | Capacitor—.035 mfd |
| 4886 | Capacitor—.05 mfd |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd |
| 37846 | Capacitor—Electrolytic—30 mfd., 150 volts |
| 37845 | Capacitor—Electrolytic comprising 1 section of 50 mfd., 250 volts, 1 section of 10 mfd., 250 volts, and 1 section of 30 mfd., 150 volts |
| 35096 | Coil—Loop primary coil |
| 37843 | Coil—Oscillator coil |
| 36226 | Condenser—Variable tuning condenser |
| 37841 | Control—Volume control |
| 32634 | Cord—Indicator drive cord (approx. 37-in. overall lg.) |
| 36093 | Core—Core and stud for oscillator coil |
| 37374 | Drum—Drive drum |
| 35870 | Indicator—Station selector indicator |
| 36231 | Loop—Antenna loop complete (When this loop is used as a replacement part in the V-101, the Bus Wire and Spaghetti must be removed.) |
| 37840 | Plate—Dial plate complete—less dial |
| 30868 | Plug—2-contact female plug for motor cable |
| 37847 | Resistor—Ballast tube resistor |
| 30785 | Resistor—150 ohms, 1 watt |
| 30150 | Resistor—3,300 ohms, 1 watt |
| 14075 | Resistor—8,200 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 30992 | Resistor—10 meg., ½ watt |
| 14350 | Screw—No. 8-32 sq. hd. set screw for drive drum |
| 35862 | Shaft—Tuning shaft |
| 31365 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Indicator drive cord spring |
| 37842 | Switch—Tone switch and phono motor switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 37844 | Transformer—Output transformer |
| 37847 | Tube—Ballast tube resistor |
| 33726 | Washer—"C" washer for tuning shaft |
| | **PICKUP AND ARM ASSEMBLIES** |
| 33591 | Arm—Pickup arm shell only |
| 37848 | Arm—Pickup pivot arm and shaft |
| 34482 | Base—Pickup mounting base |
| 34758 | Bushing—Rubber bushing and metal bushing for pivot arm shaft |
| 33122 | Crystal—Pickup crystal cartridge |
| 31048 | Plug—2-contact male plug for output cable |
| 11125 | Ring—Retaining ring for pivot shaft |
| | **MOTOR ASSEMBLIES** |
| 36402 | Arm—Idler arm and stud for motor |
| 20134 | Ball—Steel ball for turntable bearing |
| 36404 | Motor—105-125 volts, 60 cycle motor |
| 37215 | Motor—105-125 volts, 50 cycle motor |
| 36403 | Mounting—One set of motor mounting grommets, spacers and washers |
| 36406 | Plate—Idler arm guide plate for motor |
| 36401 | Plate—Motor plate complete for motor, with bearing and ball |
| 30340 | Retainer—Motor fan retainer |
| 30585 | Spring—Motor idler arm tension spring |
| 36399 | Turntable—Turntable and bushing complete with spindle |
| 33726 | Washer—"C" washer for motor idler wheel |
| 36405 | Washer—Flat washer for motor idler wheel |
| 36274 | Wheel—Motor idler wheel and bearing |
| | **SPEAKER ASSEMBLIES (RL-79B4)** |
| 37850 | Coil—Field coil (500 ohms) |
| 32906 | Coil—Neutralizing coil |
| 35441 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36462 | Clamp—Dial clamp |
| 37933 | Cup—Needle cup |
| 37852 | Decalcomania—Control panel decal |
| 36386 | Decalcomania—Trade mark decal |
| 37851 | Dial—Glass dial scale |
| 35915 | Escutcheon—Dial scale escutcheon—less dial |
| 36297 | Knob—Tone switch knob |
| 36298 | Knob—Volume control or tuning knob |
| 11765 | Lamp—Dial lamp |
| 33530 | Mounting—Mounting hardware for pickup arm |
| 30870 | Plug—2-prong male plug for motor leads |
| 36246 | Receptacle—Packaged needle receptacle |
| 32610 | Rest—Rubber pickup rest |
| 30900 | Spring—Retaining spring for knob |

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the Ground Terminal "G," and keep the output as low as possible.

**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

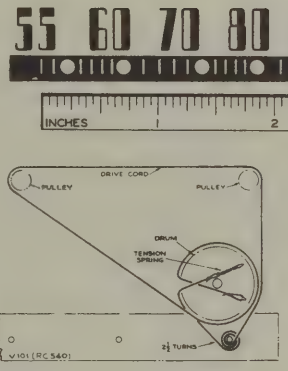
2. Place a flat 6-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

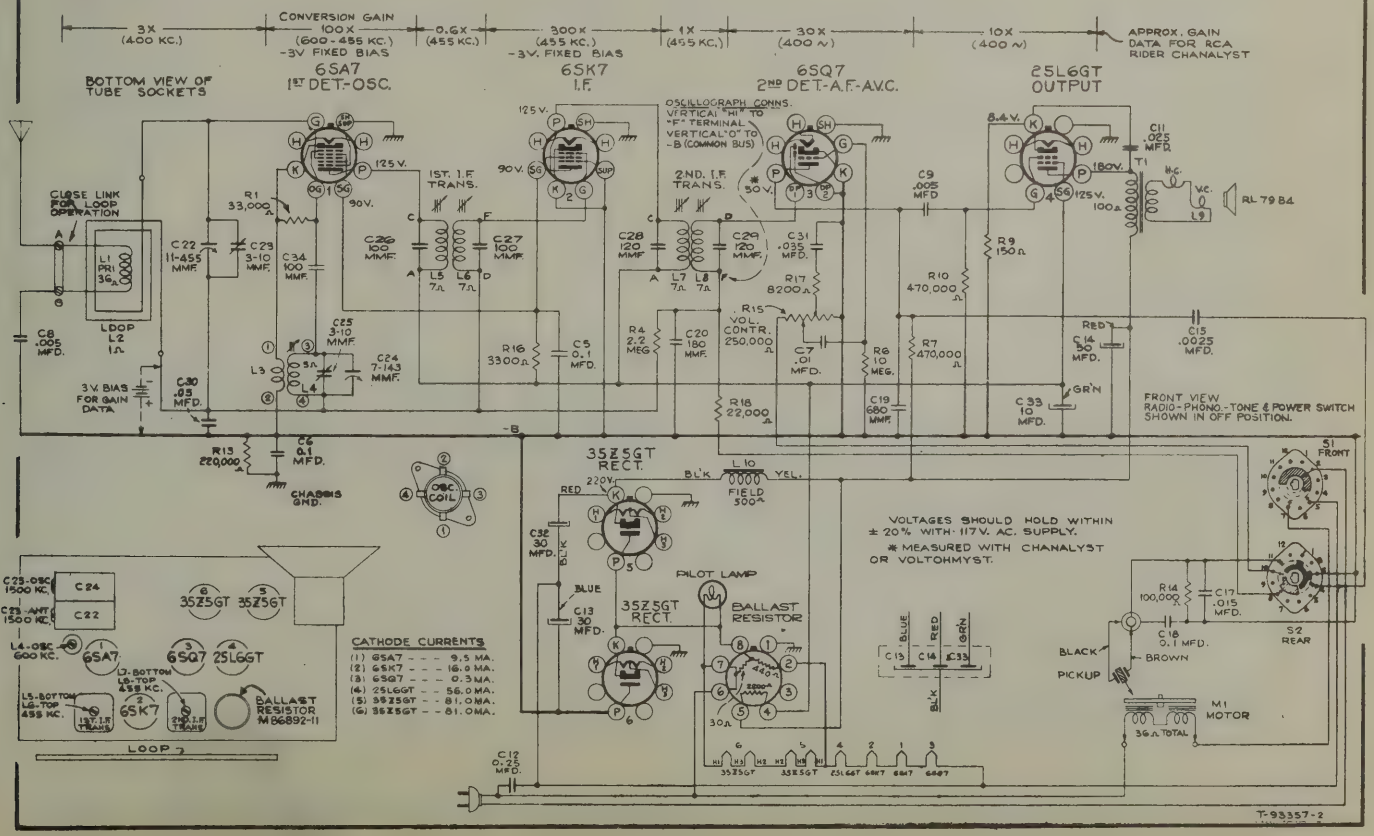
3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at the bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale.

| Steps | Connect High Side of Test Oscillator to— | Tune Test Osc. to— | Turn Radio Dial to— | Adjust for max. output— |
|---|---|---|---|---|
| 1 | 6SK7 Grid Thru 200 mmf. | 455 kc | Quiet Point between 550-750 kc | L7, L8 2nd I-F Trans. |
| 2 | 6SA7 Grid Thru 200 mmf. | 455 kc | | L5, L6 1st I-F Trans. |
| 3 | Radiation Loop | 1,500 kc | 1,500 kc (See Scale) | C25 osc. C23 ant. |
| 4 | Radiation Loop | 600 kc | 600 kc (See Scale) | L4 osc. Rock In |

**Precautionary Lead Dress.—**

1. Dress the 10 meg. and .01 uf on the 6SQ7 grid; as far away from heater and power leads and the .25 uf condenser as possible. The 10 meg. must be very short and dressed also against the grid, away from the 2nd IF transformer.
2. Dress the yellow lead between 2nd IF transformer and the switch as far away as possible from 10 meg. and .01 uf on 6SQ7 grid.
3. Dress the bus between 6SK7 plate and 2nd IF transformer toward front apron and as far away from the 6SQ7 as possible.
4. Dress the red lead between the rectifier and the switch against the corner of the chassis and front apron.
5. Dress the green 6SA7 control grid lead; close to chassis and as far away from the blue plate lead as possible; the latter also down against the chassis and as short as possible.
6. The brown heater leads, black, and brown pilot light leads, and all power and output leads must clear resistors and condenser on the 2nd IF transformer by at least ¾-in. Especially the heater lead between 25L6GT and 6SK7, which must be dressed against the rear apron.




CONVERSION GAIN
3X (400 KC.)
100X (600-455 KC.) -3V FIXED BIAS
0.6X (455 KC.)
300X (455 KC.) -3V. FIXED BIAS
1X (455 KC.)
30X (400 ~)
10X (400 ~)
APPROX. GAIN DATA FOR RCA RIDER CHANALYST
BOTTOM VIEW OF TUBE SOCKETS
6SA7 1ST DET-OSC.
6SK7 I.F.
6SQ7 2ND DET-A.F.-AV.C.
25L6GT OUTPUT
OSCILLOGRAPH CONNS. VERTICAL "HI" TO "F" TERMINAL. VERTICAL "O" TO -B (COMMON BUS)
CLOSE LINK FOR LOOP OPERATION
LOOP L2 1Ω
1ST. I.F. TRANS.
2ND. I.F. TRANS.
3V. BIAS FOR GAIN DATA
CHASSIS GND.
OSC COIL
35Z5GT RECT.
PILOT LAMP
BALLAST RESISTOR
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
FRONT VIEW RADIO-PHONO.-TONE & POWER SWITCH SHOWN IN OFF POSITION.
S1 FRONT
S2 REAR
PICKUP
M1 MOTOR
36Ω TOTAL
RL 79 B4
CATHODE CURRENTS
(1) 6SA7 - - - 9.5 MA.
(2) 6SK7 - - - 16.0 MA.
(3) 6SQ7 - - - 0.3 MA.
(4) 25L6GT - - 56.0 MA.
(5) 35Z5GT - - 81.0 MA.
(6) 35Z5GT - - 81.0 MA.
LOOP
T-93357-2

# MODEL V-102

## Chassis No. RC-524

## Seven-Tube, Single-Band, A-C, Radio-Phonograph

## Electrical and Mechanical Specifications

**Frequency Range**

Broadcast "A" ..... 540-1,700 kc

**Intermediate Frequency** ..... 455 kc

**Push-Button Ranges**

One station between approximately 540-1,030 kc
One station between approximately 610-1,250 kc
Two stations between approximately 740-1,430 kc
One station between approximately 880-1,550 kc

**Tube Complement**

(1) RCA-6SA7 ..... 1st Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 .. 2nd Detector, A.V.C. 1st A.F.
(4) RCA-6SF5 ..... Phase Inverter
(5) RCA-6F6-G ..... Power Output
(6) RCA-6F6-G ..... Power Output
(7) RCA-5Y3-G ..... Rectifier

**Power Output Rating**

Undistorted ..... 4.5 watts
Maximum ..... 5.5 watts

**Loudspeaker (RL-79-A1)**

Type ..... 6-inch Electrodynamic
V.C. Impedance ..... 3.4 ohms at 400 cycles

**Phonograph**

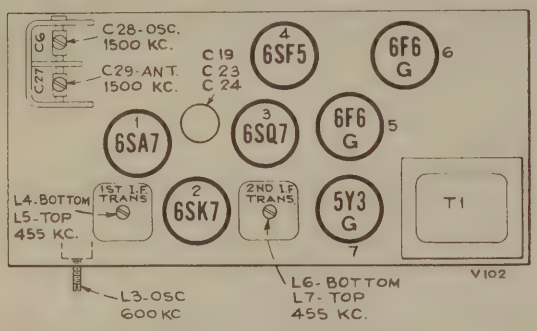
Type ..... Manual; self-starting constant-speed motor; Edge-driven Turntable.
Pickup ..... Crystal; 100,000 ohms at 1,000 cycles
Average Output ..... 1½ volts at 1,000 cycles across ½ meg.

**Power Supply Ratings**

105-125 volts, 60 cycles ..... 110 watts
105-125 volts, 25 cycles ..... 110 watts

POWER-VOLUME CONTROL | PHONO-RADIO TONE CONTROL | TUNING CONTROL

## Alignment Procedure




**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

Each method is described below.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

4. After completion of alignment, replace the glass dial in cabinet, taking care that the fibre light shields are in correct position at ends of dial.

**Phonograph Motor Service Data:—**

The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

The motor should be lubricated once or twice a year by placing a few drops of S. A. E. 20 (or equivalent) on the turntable spindle and saturating the oil retaining felt pads on the motor shaft with S. A. E. 10 oil. **Caution—The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.**

**Using Calibration Scale.—**

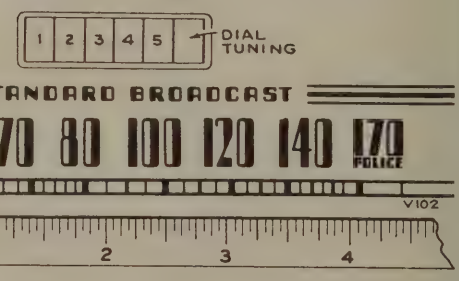
1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at bottom.

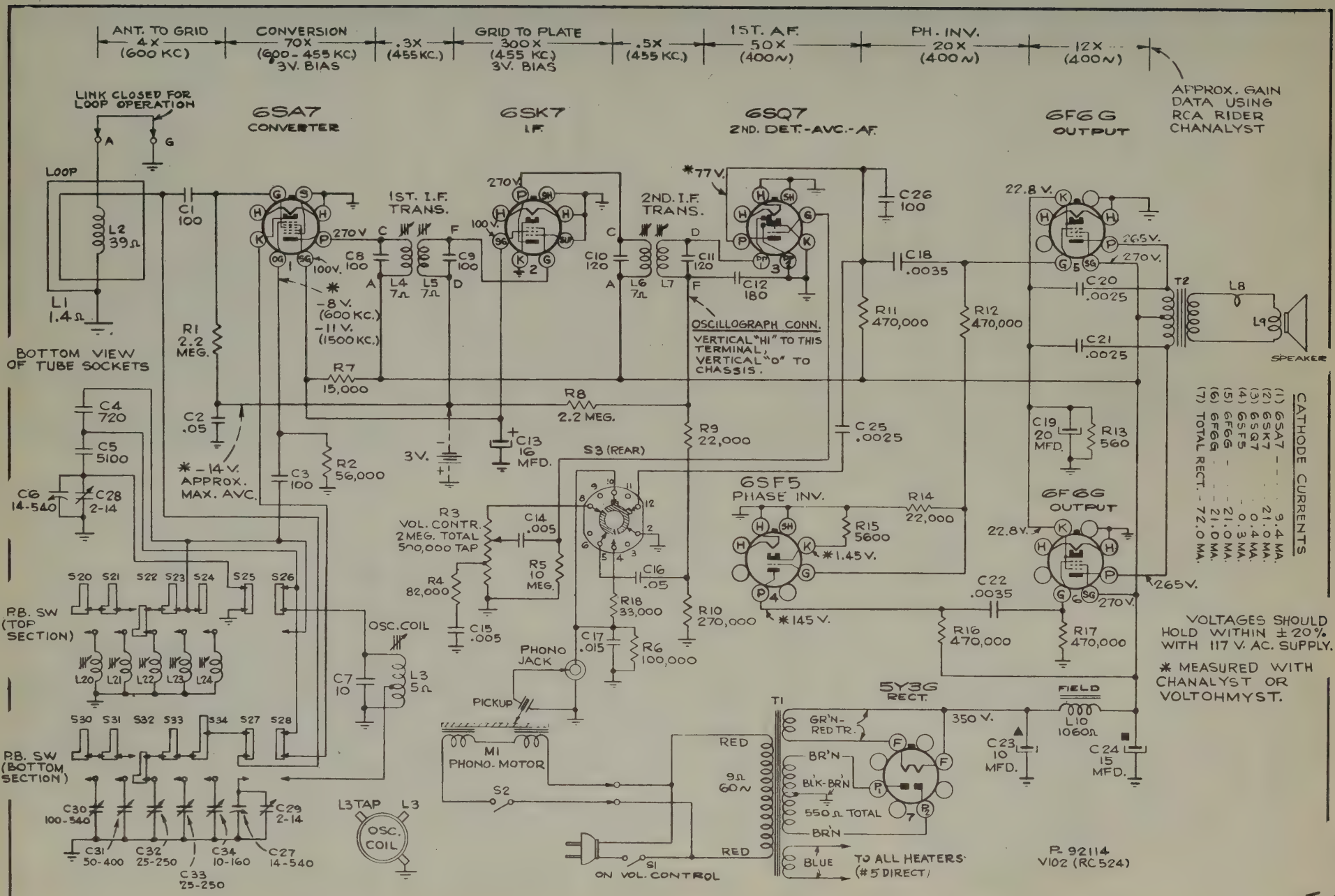
**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet Point at H-F end of dial | L6 and L7 (2nd I.F. Trans.) |
| 2 | 1st det. grid, in series with .01 mfd. | | | L4 and L5 (1st I.F. Trans.) |
| 3 | Antenna terminal, in series with 200 mmfd. (link open) | 1,500 kc | 1,500 kc "A" band | C28 (osc.) C29 (ant.) |
| 4 | | 600 kc | 600 kc "A" band | L3 (osc.) Rock in |
| 5 | Repeat steps 3 and 4. | | | |



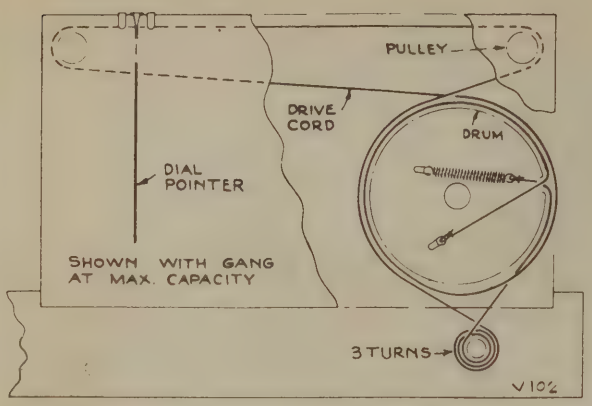

**Precautionary Lead Dress.—**

1. Dress power leads to AC switch away from terminals of volume control.
2. Dress heater leads to 6SQ7 away from 10 megohm leak.
3. Dress C-14 and C-16 away from all heater and power supply leads.
4. Green lead to loop away from I.F. can.
5. Green lead from C-1 to button assembly away from oscillator.
6. Green phono lead up from chassis and away from C-13.




The R-F and I-F gain measurements were made with a 3-volt bias battery connected from the A.V.C. bus to chassis, as shown in dotted lines.

## Push Button Adjustments




The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button and manually tune in the first station on the list.
3. Press in the left-hand button.
4. Adjust L20 to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust L20 for peak output.
5. Adjust C30 for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining four stations.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L24 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

## Replacement Parts

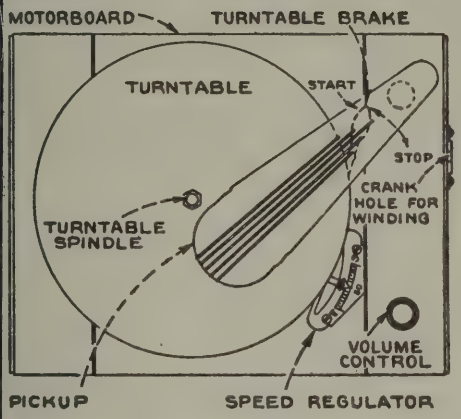
**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-524)** |
| 36239 | Board—"Antenna-Ground" terminal board and receptacle |
| 36678 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmf., 2 sections of 25-250 mmf., each, 1 section of 50-400 mmf., and 1 section of 100-540 mmf. |
| 13200 | Capacitor—10 mmf. |
| 34699 | Capacitor—100 mmf., mica |
| 12720 | Capacitor—100 mmf., moulded mica |
| 34700 | Capacitor—120 mmf. |
| 13003 | Capacitor—180 mmf. |
| 35877 | Capacitor—720 mmf. |
| 36679 | Capacitor—5,100 mmf. |
| 34459 | Capacitor—.0025 mfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 36675 | Capacitor—Electrolytic comprising 1 section of 15 mfd. 450 volts, 1 section of 10 mfd. 450 volts, and 1 section of 20 mfd. 25 volts |
| 32405 | Capacitor—Electrolytic 16 mfd., 350 volts |
| 36676 | Coil—Oscillator coil |
| 37133 | Coil—Push button oscillator coil (540-1,030 kc) |
| 35803 | Coil—Push button oscillator coil |
| 36673 | Condenser—Variable tuning condenser |
| 36487 | Control—Tone control |
| 36486 | Control—Volume control and power switch |
| 32634 | Cord—Pointer cord |
| 36093 | Core—Adjustable core and stud for oscillator coil |
| 35871 | Core—Adjustable core and stud for push button oscillator coils |
| 35870 | Indicator—Station selector indicator |
| 36674 | Loop—Antenna loop complete |
| 35096 | Loop—Loop primary coil |
| 36672 | Plate—Dial plate complete with drive cord pulleys—less dial |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulleys |
| 30735 | Resistor—560 ohms, 1 watt |
| 13714 | Resistor—5,600 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 megohm, ½ watt |
| 13601 | Resistor—10 megohm, ½ watt |
| 35862 | Shaft—Tuning shaft |
| 35772 | Shield—50-60 cycle power transformer bottom shield |
| 35709 | Shield—50-60 cycle power transformer top shield |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 36680 | Spacer—Antenna loop wooden spacer |
| 31418 | Spring—Pointer cord spring |
| 31261 | Spring—Retaining spring for core and stud |
| 36677 | Switch—P.B. selector switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer—105-120 volt, 25 cycle |
| 35959 | Transformer—Power transformer—105-120 volt, 50-60 cycle—less end shields |
| 33726 | Washer—"C" washer for tuning shaft |

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| 36768 | Arm—Pickup arm only less crystal, cable and support |
| 36805 | Arm—Pickup arm support assembly |
| 35694 | Cable—Shielded pickup cable |
| 33905 | Crystal—Pickup unit crystal cartridge |
| 34550 | Grommet—Pickup arm support rubber grommet |
| 33974 | Screw—Needle screw |
| 36770 | Base—Pickup arm mounting base |
| 36529 | Brake—Automatic brake less cam, base and shaft |
| 36772 | Cam—Automatic switch cam |
| 36771 | Mounting—Pickup arm mounting |
| 36773 | Plug—3-prong male plug |
| 36769 | Shaft—Pivot shaft |
| 36521 | Spring—Cam tension spring |
| | **MOTOR ASSEMBLIES** |
| 36402 | Arm—Idler arm and stud |
| 20134 | Ball—Steel ball |
| 36404 | Motor—105-125 volt, 60 cycle motor |
| 36403 | Mounting—One set of motor mounting grommets, spacers and washers |
| 36406 | Plate—Idler arm guide plate |
| 36401 | Plate—Motor plate complete with bearing and ball |
| 30340 | Retainer—Motor fan retainer |
| 30585 | Spring—Idler arm tension spring |
| 36399 | Turntable—Turntable and bushing complete with spindle |
| 33726 | Washer—"C" washer for idler wheel |
| 36405 | Washer—Flat washer for idler wheel |
| 36274 | Wheel—Idler wheel and bearing |
| | **SPEAKER ASSEMBLIES (RL-79A1)** |
| 32907 | Cap—Dust cap |
| 33601 | Coil—Field coil |
| 32906 | Coil—Neutralizing coil |
| 35441 | Cone—Cone complete with voice coil, center suspension and rim gaskets |
| 5039 | Plug—4-prong male speaker plug |
| 33599 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 13085 | Hinge—Lid hinge |
| 36027 | Bezel—Push button bezel—less button |
| 36721 | Box—Used needle box |
| 36299 | Button—Push button |
| 36462 | Clamp—Dial clamp |
| 36807 | Decalcomania—Control panel decal |
| 35393 | Decalcomania—Television decal |
| 36386 | Decalcomania—Trade mark decal |
| 36806 | Dial—Glass dial scale |
| 36719 | Escutcheon—Dial scale escutcheon—less dial |
| 36260 | Gauge—Needle gauge |
| 36297 | Knob—Range switch or tone switch knob |
| 36298 | Knob—Volume control or tuning knob |
| 11765 | Lamp—Dial lamp |
| 36149 | Marker—Station selector marker |
| 30870 | Plug—2-prong male plug for motor leads |
| 31572 | Plug—3-contact female plug for motor leads |
| 31048 | Plug—Phono input plug |
| 36246 | Receptacle—Needle book receptacle |
| 36720 | Rest—Pickup arm rest |
| 14270 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push button |
| 31164 | Support—Cabinet lid support |

# Model R-103-S

## Spring-Wound Record Player with Crystal Pickup




### Electrical and Mechanical Specifications

Motor.....Spring-wound, Governor Type
Speed.....78 r.p.m. (adjustable)
Record sizes.....10-inch and 12-inch

CRYSTAL PICKUP

Impedance...100,000 ohms at 1,000 cycles
Average Output Voltage.....1½ Volts at 1,000 cycles across 250,000 ohms load
Dimensions.....6-in high, 12¾-in. wide, 10-in. deep

**REFER TO MODEL O-2 FOR SERVICE DATA ON SPRING MOTOR**

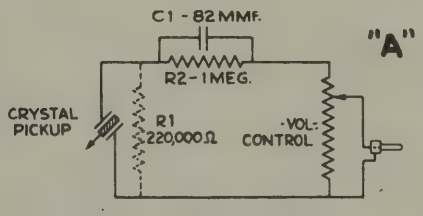
### Tone Compensation

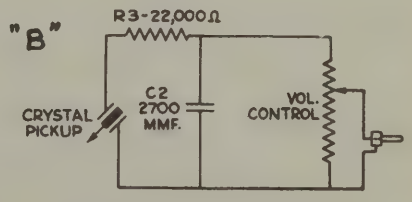
Because of the widely varying frequency characteristics of various types of audio amplifiers with which the Victrola Attachment may be used, it may be desirable in some cases to alter the pickup circuit of the Victrola Attachment to compensate for the characteristics of the amplifier. The following circuits show means of making such refinements.

In "A" R1 controls the low-frequency response; larger values of R1 give increased lows. For maximum low-frequency response, remove R1. R2 controls pickup output, smaller values of R2 giving increased output. C1 controls high-frequency response; to increase highs, increase C1.

Where a decrease in high-frequency response may be desired (for example, as an aid in reducing "needle scratch" on worn records), the circuit in "B" is applicable. In this circuit, C2 acts as loading on the pickup and is also a controlling factor on the high-frequency response. Smaller values of C2 give more pickup output and also more highs. R3 gives a sharper high-frequency reduction; increasing R3 decreases highs.

The suggested values shown in "A" and "B" should serve as a basis from which slight alterations may be made to suit individual cases




### Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

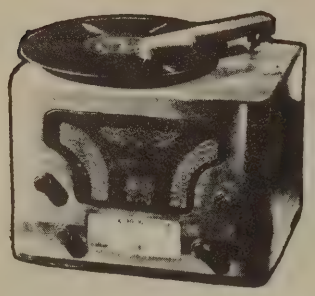
| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **MOTOR ASSEMBLIES** | | 35929 | Pivot—Pivot arm and shaft | |
| 33373 | Bearing—One set governor bearings | | 34311 | Ring—Retaining ring for pickup arm pivot shaft | |
| 33366 | Gear—Intermediate drive gear and shaft | | 33529 | Screw—Pickup needle screw | |
| 13859 | Gear—Winding gear—located on spring barrel | | | **MISCELLANEOUS ASSEMBLIES** | |
| 13858 | Gear—Worm gear—located on winding shaft | | 33682 | Brake—Turntable brake | |
| 13857 | Governor complete | | 36076 | Control—Volume control | |
| 13854 | Motor—Motor—less winding key | | 33371 | Cap—Turntable spindle cap | |
| 13860 | Shaft—Winding shaft and socket—less gear | | 35467 | Decalcomania—"RCA Victrola" decal | |
| 33367 | Spindle—Turntable spindle shaft and gear | | 33681 | Escutcheon—Speed regulator lever escutcheon | |
| 13835 | Spring—Main spring and barrel | | 33685 | Key—Winding key | |
| 13862 | Weight—Governor weight and spring | | 3961 | Knob—Volume control knob | |
| | **PICKUP ASSEMBLIES** | | 33679 | Lever—Speed regulator lever | |
| 33591 | Arm—Pickup arm—top shell only | | 35609 | Mounting—Rubber bushing, washers, and nut for pickup arm mounting | |
| 34482 | Base—Pickup mounting base | | 31048 | Plug—Male plug for output cable | |
| 34758 | Bushing—One rubber and one metal bushing for pickup arm | | 33372 | Sleeve—Rubber drive sleeve and drive plate | |
| 33122 | Crystal—Pickup crystal cartridge | | 13851 | Spring—Brake spring | |
| | | | 33369 | Turntable—Turntable—less spindle cap | |

# MODEL U-104

## Chassis No. RC-345H

## Five-Tube, Single-Band, AC, Victrola

**REFER TO MODEL 95X FOR ALIGNMENT PROCEDURE**



**Power Supply.**—Although this model employs an ac-dc chassis, it is not suitable for use on dc, as this would damage the motor.

**Antenna.**—The set is equipped with a 25-foot antenna. Do not connect the antenna to ground. If an outdoor antenna is used, it should not be longer than 100 feet, including lead-in. If it is longer, connect a 100- to 200-mmfd. capacitor in series with the lead-in.

## Electrical Specifications

Frequency Range..... 540-1,720 kc
Alignment Frequency..... 1,760 kc (ant., det.)

TUBE COMPLEMENT
(1) RCA-6K7..... R-F Amp.
(2) RCA-6J7..... Detector
(3) RCA-25L6-G..... Output
(4) RCA-25Z6-G..... Rectifier
(5) RCA-BK55B..... Ballast Tube
Dial Lamp..... Mazda No. 40, 6.3 volts, .15 amp.

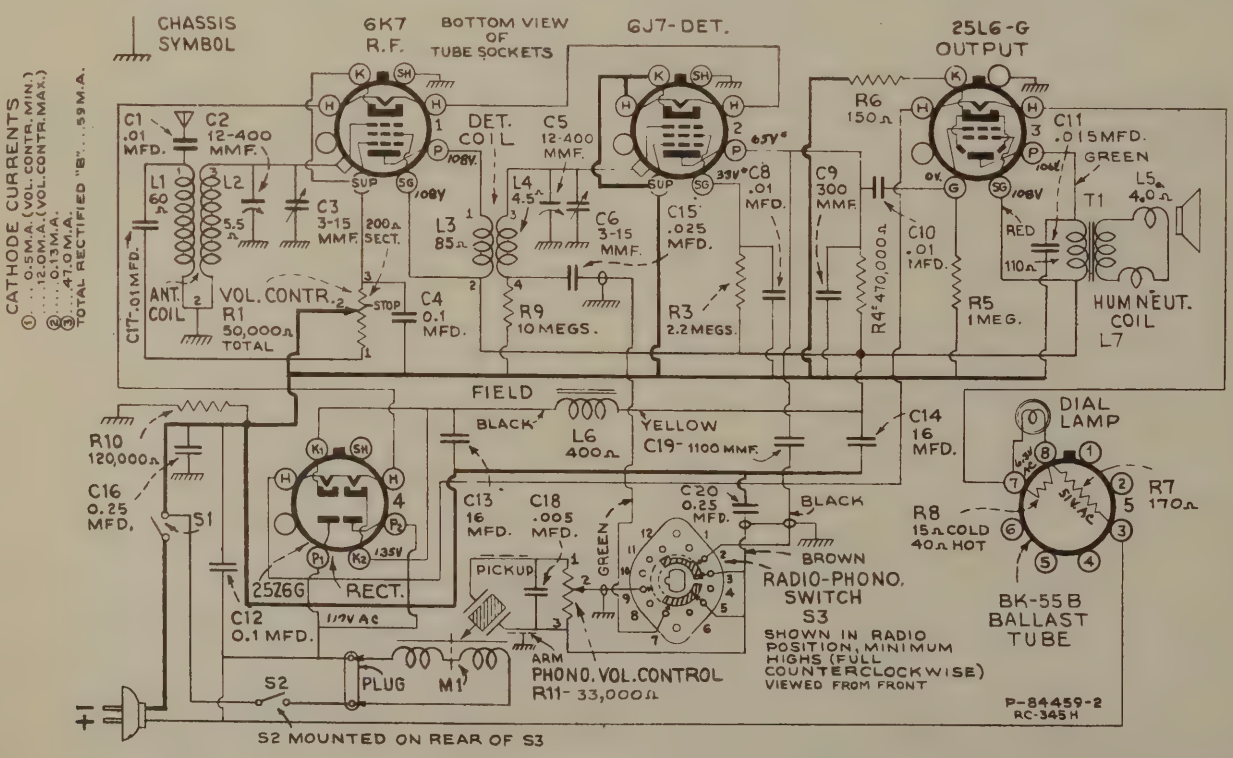
POWER SUPPLY RATINGS
A-5.....105-125 volts, 50 cycles, 60 watts
A-6.....105-125 volts, 60 cycles, 60 watts

POWER OUTPUT (125-volt, 60-cycle supply)
Undistorted..... 1.0 watt
Maximum..... 1.5 watts

LOUDSPEAKER
Type..... 5-inch Electrodynamic
Voice-Coil Impedance..... 5 ohms at 400 cycles

PHONOGRAPH..... Synchronous (manual starting)

Records..... 10-inch and 12-inch, 78 r.p.m.
Pickup..... Crystal, 100,000 ohms at 1,000 c.p.s.
Average Output of Pickup..... 1½ volts at 1,000 c.p.s. across ¼-meg. load




*** Note:** Values with star (*) are **operating** voltages. Values not starred are actual **measured** voltages.

Measurements made with set tuned to quiet point, volume control at minimum, using 1,000-ohm-per-volt meter,

Values should hold within approximately ± 20% for 117 volt 60 cycle supply.

Measurements made to common negative line, unless otherwise specified

### Precautionary Lead Dress

1. Dress power cord and line bypass C12 away from detector coil.
2. Plate lead from 6K7 to detector coil must be dressed close to chassis and run through center of chassis.
3. Green lead from detector coil to gang must be dressed clear of other leads.
4. Green lead from antenna coil to C17 must be dressed against front apron.
5. Dress all heater leads close to base.
6. Yellow lead from cathode 6K7 to volume control must be dressed against chassis, under gang condenser and against front apron.

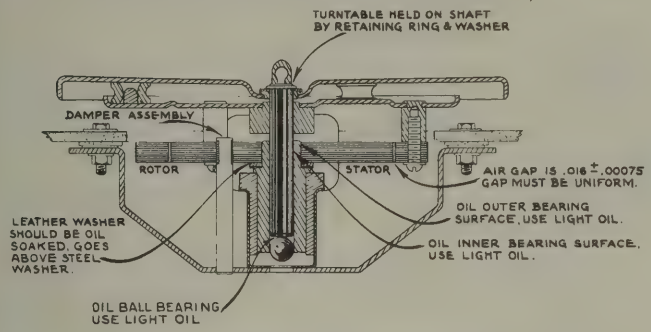
# PHONOGRAPH SERVICE DATA

The motor is started by turning the phono-radio tone control to either 3rd or 4th position clockwise and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

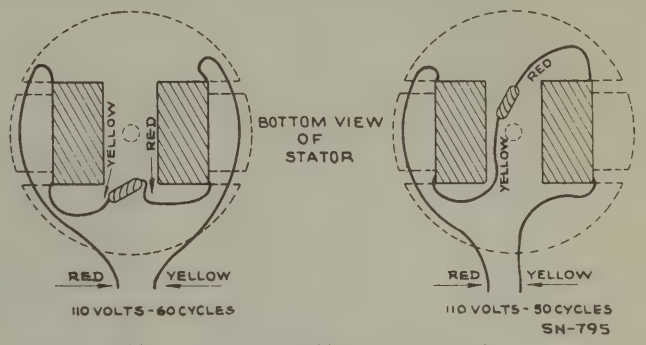
**Hum and Vibration.**—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.

**5. The damper spring must fit without binding or chattering in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. The damper spring must exert approximately equal force in restoring the stator to its mid-position when the stator is deflected manually in each direction.**

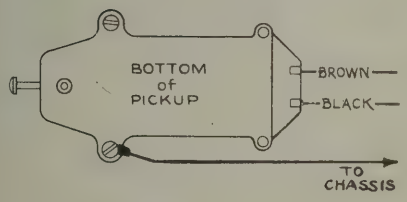

TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .0007 5 GAP MUST BE UNIFORM.
LEATHER WASHER SHOULD BE OIL SOAKED. GOES ABOVE STEEL WASHER.
OIL OUTER BEARING SURFACE, USE LIGHT OIL.
OIL INNER BEARING SURFACE, USE LIGHT OIL.
OIL BALL BEARING USE LIGHT OIL

*Cross Section of Motor Assembly*



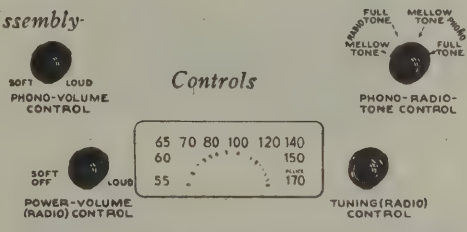

*Motor Coil Assembly and Connections*

D-C resistance of each coil (for 110 volts, 50 and 60 cycles) is approximately 82 ohms




*Pickup Connections*

*Controls*




**Additional Replacement Parts:**

**Stock No.**

33041 Ring — Retaining ring and metal washer to mount turntable plate

Speaker No. RL-78-3 is used as a substitute for speaker No. 84202-3. For complete speaker replacement, use Stock No. 31201 (84202-3).

REPLACEMENT PARTS FOR SPEAKER RL-78-3

**Stock No.**

32907 Cap—Cone center dust cap
33555 Coil—Speaker field coil
32906 Coil—Speaker hum neutralizing coil
32904 Cone—Speaker cone and voice coil
33556 Transformer—Output transformer

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **CHASSIS ASSEMBLIES (RC-345H)** | | | **PICKUP AND ARM ASSEMBLIES** | |
| 31198 | Ballast—Ballast resistor tube (R7, R8) | | 32226 | Base—Pickup arm pivot shaft and base assembly | |
| 4287 | Body—Connector body for dial lamp connector | | 4286 | Bushing—Bushing and ferrule insert for connector cap | |
| 30883 | Capacitor—300 mmfd. (C9) | | 4288 | Cap—Pickup cable connector cap | |
| 12635 | Capacitor—1,100 mmfd. (C19) | | 31050 | Crystal—Pickup crystal and needle screw | |
| 4838 | Capacitor—.005 mfd., 1,000 V. (C18) | | 32227 | Pickup arm and crystal complete—less mounting, Stock No. 31054 | |
| 4858 | Capacitor—.01 mfd., 500 V. (C17) | | 12539 | Screw—Pickup needle screw | |
| 14393 | Capacitor—.01 mfd., 300 V. (C1, C8, C10) | | | **MOTOR ASSEMBLIES** | |
| 11315 | Capacitor—.015 mfd., 400 V. (C11) | | 9841 | Motor—110-volt, 60-cycle—complete with mounting (M1) | |
| 30938 | Capacitor—.025 mfd. (C15) | | 31034 | Motor—110-volt, 50-cycle—less mounting (M1) | |
| 30899 | Capacitor—0.1 mfd., 200 V. (C4) | | 31037 | Rotor—Turntable and rotor lamination assembly—complete for 50-cycle operation | |
| 4839 | Capacitor—0.1 mfd., 400 V. (C12) | | 31036 | Rotor—Turntable and rotor lamination assembly—complete for 60-cycle operation | |
| 12484 | Capacitor—0.25 mfd., 350 V. (C20, C16) | | 31043 | Stator—Stator assembly—complete with coils and laminations for 50-cycle operation | |
| 31323 | Capacitor—16 mfd., 150 V. (C13, C14) | | 31042 | Stator—Stator assembly—comprising coils and laminations for 60-cycle operation | |
| 30875 | Coil—Antenna coil (L1, L2) | | | **SPEAKER ASSEMBLIES (84202-3)** | |
| 30876 | Coil—R.F. coil (L3, L4) | | 31202 | Cone—Speaker cone (L5) | |
| 31195 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6) | | 31201 | Speaker—Speaker complete | |
| 14086 | Cord—Power cord | | 31203 | Transformer—Output transformer (T1) | |
| 32634 | Cord—Variable condenser drive cord | | | **MISCELLANEOUS ASSEMBLIES** | |
| 31200 | Dial—Station selector dial scale and plate assembly | | 31205 | Crystal—Station selector dial crystal | |
| 4286 | Ferrule—Ferrule for dial lamp connector | | 30863 | Knob—Station selector or power switch knob | |
| 4340 | Lamp—Pilot lamp | | 31054 | Mounting—Pickup arm rubber mounting, washer, and nut | |
| 31193 | Lead—Antenna lead | | 30870 | Plug—2-contact male plug for motor leads | |
| 30868 | Plug—2-contact female motor cable plug | | 14267 | Screw—Chassis mounting screw | |
| 31196 | Pointer—Station selector indicator pointer | | 31053 | Screw—Motor mounting screw assembly complete | |
| 31198 | Resistor—Ballast resistor tube (R7, R8) | | | | |
| 30880 | Resistor—150 ohms, ½ watt (R6) | | | | |
| 13734 | Resistor—120,000 ohms, ½ watt (R10) | | | | |
| 12285 | Resistor—470,000 ohms, ½ watt (R4) | | | | |
| 13730 | Resistor—1 megohm, ½ watt (R5) | | | | |
| 12679 | Resistor—2.2 megohms, ½ watt (R3) | | | | |
| 13601 | Resistor—10 megohms, ½ watt (R9) | | | | |
| 31197 | Shaft—Indicator pointer shaft and pulley | | | | |
| 31251 | Socket—8-contact tube socket | | | | |
| 14171 | Socket—Lamp socket assembly | | | | |
| 4284 | Spring—Spring for dial lamp connector | | | | |
| 31096 | Switch—Phono. switch (S2) | | | | |
| 31198 | Tube—Ballast resistor tube (R7, R8) | | | | |
| 32209 | Volume Control—(Phono.) (R11) | | | | |
| 31966 | Volume Control—Volume control power switch (R1, S1) | | | | |
| 4285 | Washer—Insulating washer for dial lamp connector | | | | |

# MODEL K-105

Chassis No. RC-476

## Ten-Tube, Three-Band, AC, Superheterodyne Receiver

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast | 540-1,550 kc |
| Medium Wave | 1.55-4.0 mc |
| Short Wave | 5.8-18.0 mc |
| INTERMEDIATE FREQUENCY | 455 kc |

TUBE COMPLEMENT

( 1) RCA-6SK7..... R-F Amplifier
( 2) RCA-6SA7..... 1st Det., Oscillator
( 3) RCA-6SK7..... I-F Amplifier
( 4) RCA-6H6..... 2nd Det., A.V.C.
( 5) RCA-6SF5..... A-F Amplifier
( 6) RCA-6SF5..... Phase Inverter
( 7) RCA-6F6-G..... Power Output
( 8) RCA-6F6-G..... Power Output
( 9) RCA-5U4-G..... Rectifier
(10) RCA-6U5/6G5.... Tuning Indicator

PILOT LAMPS (2) .... Mazda No. 44, 6.3 volts, 0.25 amp.

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER (RL-70K-2)

Type..... 12-inch electrodynamic
V.C. Impedance.... 2.2 ohms at 400 cycles

POWER SUPPLY RATINGS

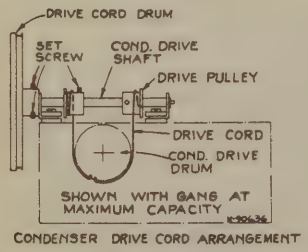
Rating A..... 105-125 volts, 50-60 cycles, 150 watts
Rating B..... 105-125 volts, 25-60 cycles, 150 watts
Rating C..... 100-130, 140-160, 195-250 volts, 40-60 cycles, 150 watts

## Push Button Adjustment

The push-buttons should be adjusted for eight favorite stations after the receiver is operating, and has had a brief warm-up period.

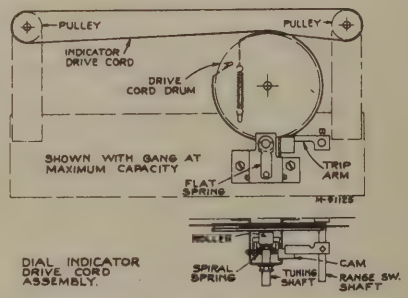
Any standard broadcast stations may be chosen. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-button screws in back of the station-marker recesses.
2. Set Accessory-Tone Knob to "Radio" and turn the range selector to "A."
3. Press in the tuning knob and accurately tune in the first station.
4. With station accurately tuned in, press in the first push-button and tighten the screw.
5. Place the station marker tab in the recess.
6. Proceed in a similar manner to adjust the remainder of the push-buttons.

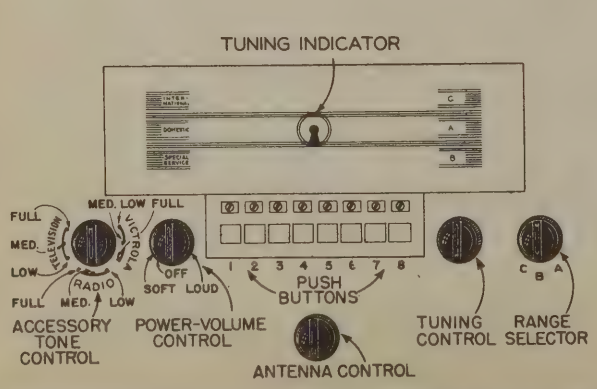


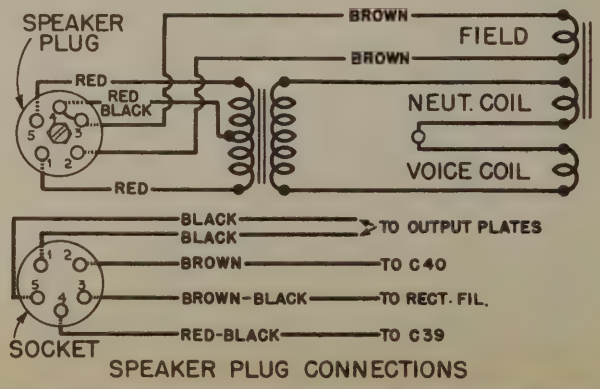

CONDENSER DRIVE CORD ARRANGEMENT

Note: In the Dial Indicator Drive Cord Assembly drawing the mechanism is shown with the range switch in the "A" band position. In this position the trip arm on the range shaft must be adjusted so that when the push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

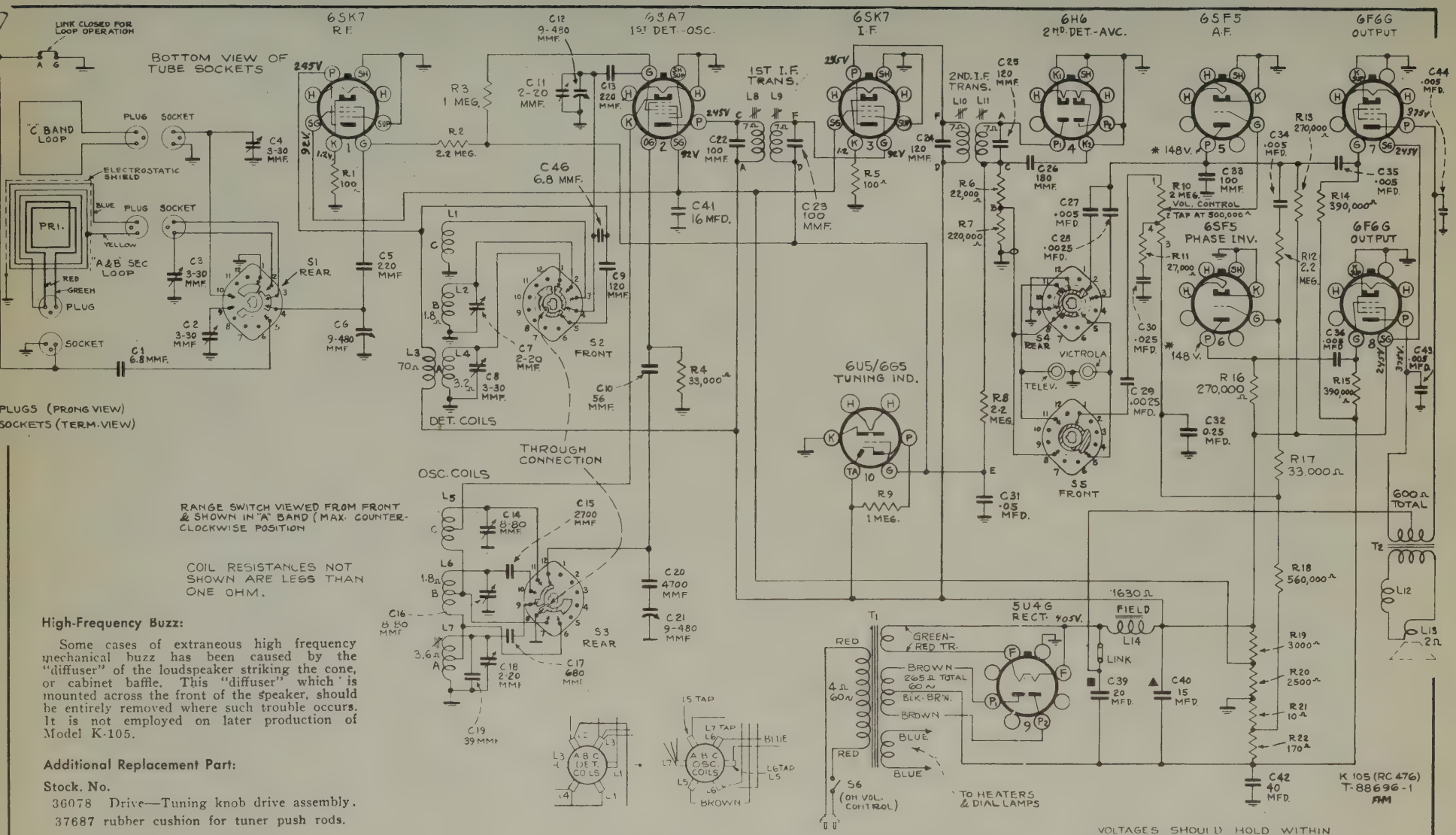



DIAL INDICATOR DRIVE CORD ASSEMBLY.




SPEAKER PLUG CONNECTIONS




**High-Frequency Buzz:**

Some cases of extraneous high frequency mechanical buzz has been caused by the "diffuser" of the loudspeaker striking the cone, or cabinet baffle. This "diffuser" which is mounted across the front of the speaker, should be entirely removed where such trouble occurs. It is not employed on later production of Model K-105.

**Additional Replacement Part:**

Stock. No.

36078 Drive—Tuning knob drive assembly.

37687 rubber cushion for tuner push rods.

**Precautionary Lead Dress:**

1. Dress 4,000-mmfd. roll capacitor from the range switch to the gang condenser (C21) away from the chassis.
2. Dress 2,700-mmfd. capacitor connected from the oscillator coil (L6) to the range switch away from the bus wire directly beneath it.
3. Dress leads from phono and television plugs to tone control switch away from the speaker leads, terminal No. 3 (plate) of the output leads and away from the 6H6.
4. Dress red AC leads to power switch away from 6H6 and away from volume control terminals.
5. Leads from power transformer must be dressed close to base away from trimmer bank and oscillator coil.
6. All leads from trimmers should be dressed away from chassis base and range switch.
7. Green, blue, and brown leads from loop terminal boards should be dressed away from chassis base and range switch.

VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. A.C. SUPPLY.
STARRED (*) VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE: THE ACTUAL MEASURED VOLTAGES WILL BE LOWER DEPENDING ON THE VOLTMETER LOADING.

CATHODE CURRENTS

| | | |
|---|---|---|
| (1) | 6SK7 | 12.2 MA. |
| (2) | 6SA7 | 9.0 MA. |
| (3) | 6SK7 | 12.7 MA. |
| (5) | 6SF5 | 0.36 MA. |
| (6) | 6SF5 | 0.35 MA. |
| (7) | 6F6-G | 25.0 MA. |
| (8) | 6F6-G | 25.0 MA. |
| TOTAL RECTIFIED "B" CURRENT | | 123.0 MA. |

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

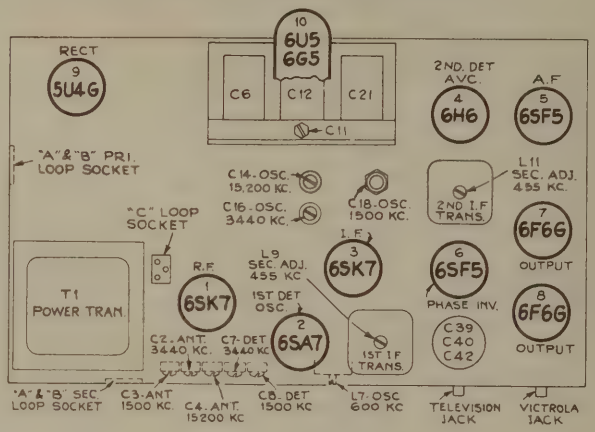
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, keep the output as low as possible to avoid a-v-c action. For the first six steps in alignment the low side of the test-oscillator should be connected to the receiver chassis. Following step 6, the signal must be radiated (see note under alignment table).

**Calibration Scale on Indicator-Drive-Cord Drum.** — The tuning dial is fastened in the cabinet and cannot be used for reference during the first six steps of alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.




| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "B" band Quiet point between 1.5-2.0 mc | L10 and L11 (2nd I-F trans.) |
| 2 | 6SA7 det. grid in series with .01 mfd. | | | L8 and L9 (1st I-F trans.) |
| 3 | 6SK7 R-F grid in series with 0.1 mfd. | 15.2 mc | 15.2 mc (192°) "C" band | C14 (osc.)* C11 (det.) Rock Gang |
| 4 | | 3.44 mc | 3.44 mc (183°) "B" band | C16 (osc.)** C7 (det.) |
| 5 | | 600 kc | 600 kc (38.5°) "A" band | L7 (osc.) Rock gang |
| 6 | | 1,500 kc | 1,500 kc (216°) "A" band | C18 (osc.) C8 (det.) |
| 7 | Radiate signal (See note) | 15.2 mc | 15.2 mc "C" band | C4 (ant.) |
| 8 | | 6.1 mc | 6.1 mc "C" band | Inductance of "C" band loop† |
| 9 | | Repeat step 7 | | |
| 10 | | 3.44 mc | 3.44 mc "B" band | C2 (ant.) |
| 11 | | 1,500 kc | 1,500 kc "A" band | C3 (ant.) |
| 12 | | 600 kc | 600 kc "A" band | L7 (osc.) Rock Gang |
| 13 | | 1,500 kc | 1,500 kc "A" band | C18 (osc.) C8 (det.) |

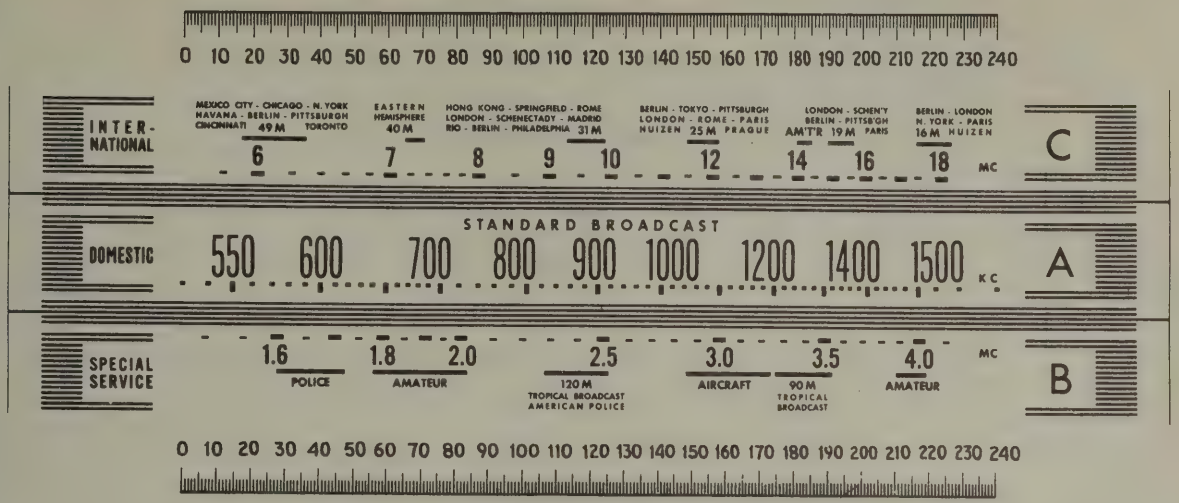
**Note.**—Following step 6, a radiated signal must be used for the remainder of the alignment. One or two turns of wire forming a loop approximately 18 inches in diameter connected across the output of a test-oscillator such as RCA Model 153, or Stock No. 9595 (TMV-97C), etc., will be suitable. For the adjustments using the radiated signal, the chassis must be placed in the cabinet and the receiver loops connected. The radiating loop should be placed near enough to the receiver loop to provide ample signal strength for alignment.

* Use **minimum** capacity peak if two can be obtained. Check to determine that C14 has been adjusted to the correct peak by tuning the receiver to approximately 14.29 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C16 has been adjusted to the correct peak by tuning the receiver to approximately 2.53 mc where a weaker signal should be received.

† Adjust the inductance of "C" band loop by varying the spacing between the leads of the loop. Moving the leads closer together decreases the inductance and tunes the loop to a higher frequency; moving the leads farther apart increases the inductance and tunes the loop to a lower frequency.

**Important.**—The oscillator tracks **above** the signal on all bands.


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240
INTER-NATIONAL
MEXICO CITY - CHICAGO - N. YORK
HAVANA - BERLIN - PITTSBURGH
CINCINNATI 49 M TORONTO
EASTERN HEMISPHERE 40 M
HONG KONG - SPRINGFIELD - ROME
LONDON - SCHENECTADY - MADRID
RIO - BERLIN - PHILADELPHIA 31 M
BERLIN - TOKYO - PITTSBURGH
LONDON - ROME - PARIS
NUIZEN 25 M PRAGUE
LONDON - SCHEN'Y
BERLIN - PITTSB'GH
AM'TR 19 M PARIS
BERLIN - LONDON
N. YORK - PARIS
16 M NUIZEN
6 7 8 9 10 12 14 16 18 MC
C
DOMESTIC
STANDARD BROADCAST
550 600 700 800 900 1000 1200 1400 1500 KC
A
SPECIAL SERVICE
1.6 POLICE
1.8 2.0 AMATEUR
2.5 120 M TROPICAL BROADCAST AMERICAN POLICE
3.0 AIRCRAFT
3.5 90 M TROPICAL BROADCAST
4.0 AMATEUR
MC
B
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240

*Receiver Dial Scales, and Corresponding 0-240° Calibration Scales*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-476)** |
| 33620 | Arm—Push arm and cam assembly on tuning unit —less lock screw |
| 34574 | Board—"Antenna-Ground" board |
| 30766 | Cap—Rubber cap for Tuning Indicator |
| 12884 | Capacitor—Air trimmer—2-20 mmfd. (C18) |
| 34701 | Capacitor—Trimmer comprising 4 sections of 3-30 mmfd. and 1 section of 2-20 mmfd. (C2, C3, C4, C7, C8) |
| 34702 | Capacitor—Trimmer comprising 2 sections of 8-80 mmfd. (C14, C16) |
| 14079 | Capacitor—6.8 mmfd. (C1, C46) |
| 13545 | Capacitor—39 mmfd. (C19) |
| 12723 | Capacitor—56 mmfd. (C10) |
| 12720 | Capacitor—100 mmfd. (C33) |
| 34699 | Capacitor—100 mmfd. (C22, C23) |
| 12724 | Capacitor—120 mmfd. (C9) |
| 34700 | Capacitor—120 mmfd. (C24, C25) |
| 13003 | Capacitor—180 mmfd. (C26) |
| 12694 | Capacitor—220 mmfd. (C5, C13) |
| 31552 | Capacitor—680 mmfd. (C17) |
| 30057 | Capacitor—2,700 mmfd. (C15) |
| 31399 | Capacitor—4,700 mmfd. (C20) |
| 34459 | Capacitor—.0025 mfd. (C28, C29) |
| 33584 | Capacitor—.005 mfd. (C27, C34, C35, C36, C43, C44) |
| 4870 | Capacitor—.025 mfd. (C30) |
| 32787 | Capacitor—.05 mfd. (C31) |
| 12484 | Capacitor—0.25 mfd. (C32) |
| 31323 | Capacitor—16 mfd. (C41) |
| 34533 | Capacitor—Electrolytic comprising 1 section of 20 mfd., 1 section of 15 mfd. and 1 section of 40 mfd. |
| 34579 | Coil—Oscillator coil |
| 34697 | Coil—R.F. coil |
| 32634 | Cord—Tuning condenser drum drive cord |
| 32713 | Core—Core and stud for oscillator coil |
| 34578 | Control—Tone control |
| 34695 | Control—Volume control and power switch |
| 33627 | Drum—Condenser drive drum |
| 33174 | Drum—Tuning condenser drive drum |
| 34532 | Gear—Gear sector for range switch |
| 11891 | Lamp—Dial lamp |
| 33427 | Pulley—Drive cord pulley and mounting bracket |
| 35005 | Pulley—Drive pulley less bronze drive cord |
| 34537 | Resistor—Voltage divider comprising 1 section of 3,000 ohms, 1 section of 2,500 ohms, 1 section of 10 ohms, and 1 section of 170 ohms (R19, R20, R21, R22) |
| 14439 | Resistor—100 ohms, ½ watt (R1, R5) |
| 13998 | Resistor—22,000 ohms, ½ watt (R6) |
| 12738 | Resistor—27,000 ohms, ½ watt (R11) |
| 12454 | Resistor—33,000 ohms, ½ watt (R4, R17) |
| 12264 | Resistor—220,000 ohms, ½ watt (R7) |
| 12199 | Resistor—270,000 ohms, ½ watt (R13, R16) |
| 13479 | Resistor—390,000 ohms, ½ watt (R14, R15) |
| 12486 | Resistor—560,000 ohms, ½ watt (R18) |
| 12013 | Resistor—1 megohm, 1/10 watt (R9) |
| 13730 | Resistor—1 megohm, ½ watt (R3) |
| 12679 | Resistor—2.2 megohm, ½ watt (R2, R8, R12) |
| 30340 | Retainer—Retainer for shaft of tuning shaft cam and arm |
| 33419 | Roller—Friction roller for tuning knob shaft |
| 31613 | Screw—No. 8-32 milled head set screw for drum, Stock No. 33174 |
| 14350 | Screw—No. 8-32 square head set screw for gear, Stock No. 34532 |
| 33621 | Screw—Push arm lock screw |
| 34703 | Shaft—Range switch shaft |
| 33422 | Shaft—Tuning shaft less friction roller |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Tuning Indicator socket |
| 14278 | Socket—Phonograph input socket |
| 34575 | Socket—2-terminal loop socket |
| 31319 | Socket—Tube socket |
| 33175 | Spring—Drive cord spring |
| 33622 | Spring—Push arm return spring |
| 34694 | Spring—Tuning shaft cam spiral spring |
| 33421 | Spring—Tuning shaft flat spring |
| 34696 | Switch—Range switch |
| 34698 | Transformer—First i-f transformer |
| 34524 | Transformer—Second i-f transformer |
| 34693 | Transformer—Power transformer—110 volts, 25 cycles |
| 34539 | Transformer—Power transformer—105-125 volts, 50-60 cycles |
| | **SPEAKER ASSEMBLIES (RL-70K-5)** |
| 31825 | Cap—Dust cap |
| 35170 | Coil—Field coil |
| 11469 | Coil—Neutralizing coil |
| 34773 | Cone—Cone complete with voice coil |
| 34728 | Diffuser |
| 31539 | Plug—5-prong male plug for speaker |
| 14534 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 35046 | Bearing—Antenna loop bearing comprising spindle and pivot |
| 33474 | Button—Push button |
| 34285 | Clip—Tuning Indicator clip |
| 35045 | Dowel—1 set of dowel pins for loop antenna |
| 33439 | Escutcheon—Station selector escutcheon less push buttons |
| 34706 | Frame—Dial frame complete with brackets less dial, pointer, pointer guide rods and Tuning Indicator clip |
| 34583 | Frame—Frame only for "C" band loop |
| 34383 | Indicator—Station selector indicator |
| 33434 | Knob—Tuning, tone control, range switch or power switch and volume control knob |
| 35132 | Loop—"A" and "B" band antenna loop |
| 33842 | Marker—Push button station markers |
| 34990 | Plug—2-prong male plug for "C" band loop |
| 32641 | Plug—3-prong male plug for "A" and "B" band loop |
| 34708 | Scale—Glass dial scale |
| 35049 | Shaft—Flexible shaft assembly to turn loop |
| 34491 | Shaft—Pointer carriage guide shaft |
| 14270 | Spring—Retaining spring for knob, Stock No. 33434 |

# MODEL V-105 AND RADIOLA 560P

## Chassis No. RC-517C RC517F

## Five-Tube, Single-Band, A-C, Superheterodyne Radio & Phonograph

### Electrical and Mechanical Specifications

FREQUENCY RANGE ..... 540-1,650 kc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st Det.—Osc.
(2) RCA-12SK7 ..... I-F Amplifier
(3) RCA-12SQ7 ..... 2nd Det., A.V.C., and A-F Amplifier
(4) RCA-50L6-GT ..... Power Output
(5) RCA-35Z5-GT ..... Rectifier

POWER OUTPUT

Undistorted ..... 0.9 watts
Maximum ..... 1.2 watts

PILOT LAMP ..... 1—Mazda No. 51, 6-8 volts, 0.2 amps.

POWER SUPPLY RATING

105-125 volts, 50 cycles ..... 55 watts
105-125 volts, 60 cycles ..... 55 watts

LOUDSPEAKER (RL-81B-4)

Type ..... 5-inch electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 10 15/16 | 16 9/16 | 13 11/32 |
| Weight (net) | | | 19 lbs. |
| Shipping | | | 23 lbs. |

Tuning Drive Ratio ..... 9:1

### RADIOLA R-560P

Same as V-105

**EXCEPT**

| | |
|---|---|
| 38818 | Dial - Dial scale. |
| 30492 | Resistor - 22,000 ohms 1/4 watt. |
| 30649 | Resistor - 2.2 meg 1/4 watt |

### Speaker No. 92322-2:

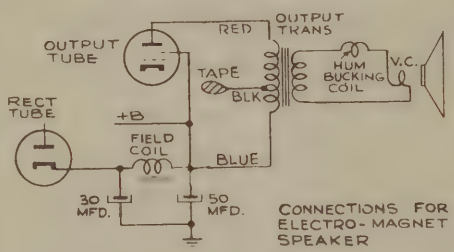
In some production of V-105, the speaker is stamped 92322-2. The cone and voice coil for this speaker is Stock No. 39536.

### Phono Compensation Change:

C17 and R16, shunted across the pickup are changed from .015 to .01 mfd. (Stock No. 4937), and from 47,000 to 68,000 ohms (Stock No. 13715).

### Using EM Speaker Replacement:

RL-86A-3 "EM" speaker can be used as a replacement for RL-81B-4 PM speaker in Model V-105 by wiring in the field coil and output transformer as shown in accompanying diagram. The original output transformer can be used by taping up the black (tap) lead.




CONNECTIONS FOR ELECTRO-MAGNET SPEAKER

In this particular model, it is necessary to solder a jumper across contacts 8 and 9 on the front section of the radio-phono switch. This keeps the 1st-detector and IF tubes in operation when the switch is in "phono" position, and thus maintains sufficient current through the field coil for adequate excitation.

The customer should be instructed to tune the set to a quiet point on the dial to prevent radio break-through on phono.

### Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-517C)** |
| 34699 | Capacitor—100 mmfd. |
| 34700 | Capacitor—120 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 37102 | Capacitor—.001 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 36301 | Capacitor—Electrolytic, comprising one section of 30 mfd., 150 volts, and one section of 50 mfd., 150 volts |
| 38338 | Coil—Oscillator coil |
| 36285 | Condenser—Variable tuning condenser |
| 37977 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 9½ inches long) |
| 38337 | Dial—Dial scale |
| 37914 | Indicator—Station selector indicator |
| 36289 | Loop—Antenna loop complete |
| 36286 | Plate—Dial back plate complete—less dial |
| 30868 | Plug—2-contact female plug for motor cable |
| 14671 | Resistor—33 ohms, ½ watt |
| 30189 | Resistor—120 ohms, ½ watt |
| 3153 | Resistor—1500 ohms, 1 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 11668 | Resistor—5.6 meg., ½ watt |
| 36290 | Shaft—Tuning knob shaft |
| 36292 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 36288 | Switch—Phono switch |
| 35666 | Transformer—Output transformer |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 33726 | Washer—Spring washer for tuning shaft |

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| 33591 | Arm—Pickup arm only—less cartridge, base and cable |
| 34481 | Arm—Pickup pivot arm and shaft |
| 34482 | Base—Pickup mounting base |
| 34758 | Bushing—Rubber bushing and metal bushing for pickup pivot arm shaft |
| 33122 | Crystal—Pickup crystal cartridge and needle screw |
| 34311 | Ring—Retaining ring for pivot shaft |
| 33529 | Screw—Needle screw |
| | **MOTOR ASSEMBLIES** |
| 36402 | Arm—Idler arm and stud |
| 20134 | Ball—Steel ball |
| 36404 | Motor—105-125 volts, 60 cycle motor |
| 36403 | Mounting—One set of motor mounting grommets, spacers and washers |
| 36406 | Plate—Idler arm guide plate |
| 36401 | Plate—Motor plate complete with bearing and ball |
| 30340 | Retainer—Motor fan retainer |
| 30585 | Spring—Idler arm tension spring |
| 36399 | Turntable and bushing complete with spindle |
| 33726 | Washer—"C" washer for idler wheel |
| 36405 | Washer—Flat washer for idler wheel |
| 36274 | Wheel—Idler wheel and bearing |
| | **SPEAKER ASSEMBLIES (RL-81B-4)** |
| 35849 | Cap—Dust cap |
| 38340 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38341 | Crystal—Dial scale crystal—less dial |
| 37933 | Cup—Used needle cup |
| 38342 | Decalcomania—Control panel decal—pkg. 5 |
| 36386 | Decalcomania—Trade mark decal |
| 35814 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 36305 | Mounting—Mounting hardware for motor |
| 36303 | Mounting—Mounting hardward for pickup arm |
| 30870 | Plug—2-prong male plug for motor leads |
| 36246 | Receptacle—Packaged needle receptacle |
| 32610 | Rest—Rubber pickup rest |
| 30900 | Spring—Retaining spring for knob |

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet point 1,600 kc end of dial | L8 and L9 2nd I-F transformer |
| 2 | 1st Det. grid in series with .01 mfd. | | | L6 and L7 1st I-F transformer |
| 3 | Ant. terminal in series with 200 mmfd. | 1,650 kc | Gang at minimum | C25 (osc.) C31 (osc.) |
| 4 | Radiated signal 1300 kc | | Signal Frequency | C23 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |

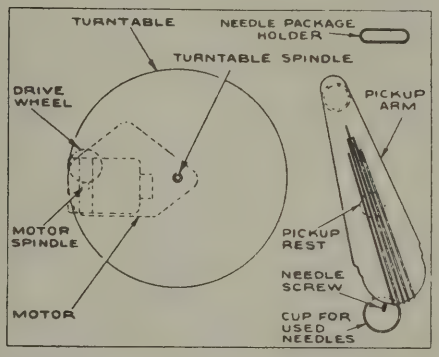
MODEL V105

**Phonograph Motor Service Data:—**

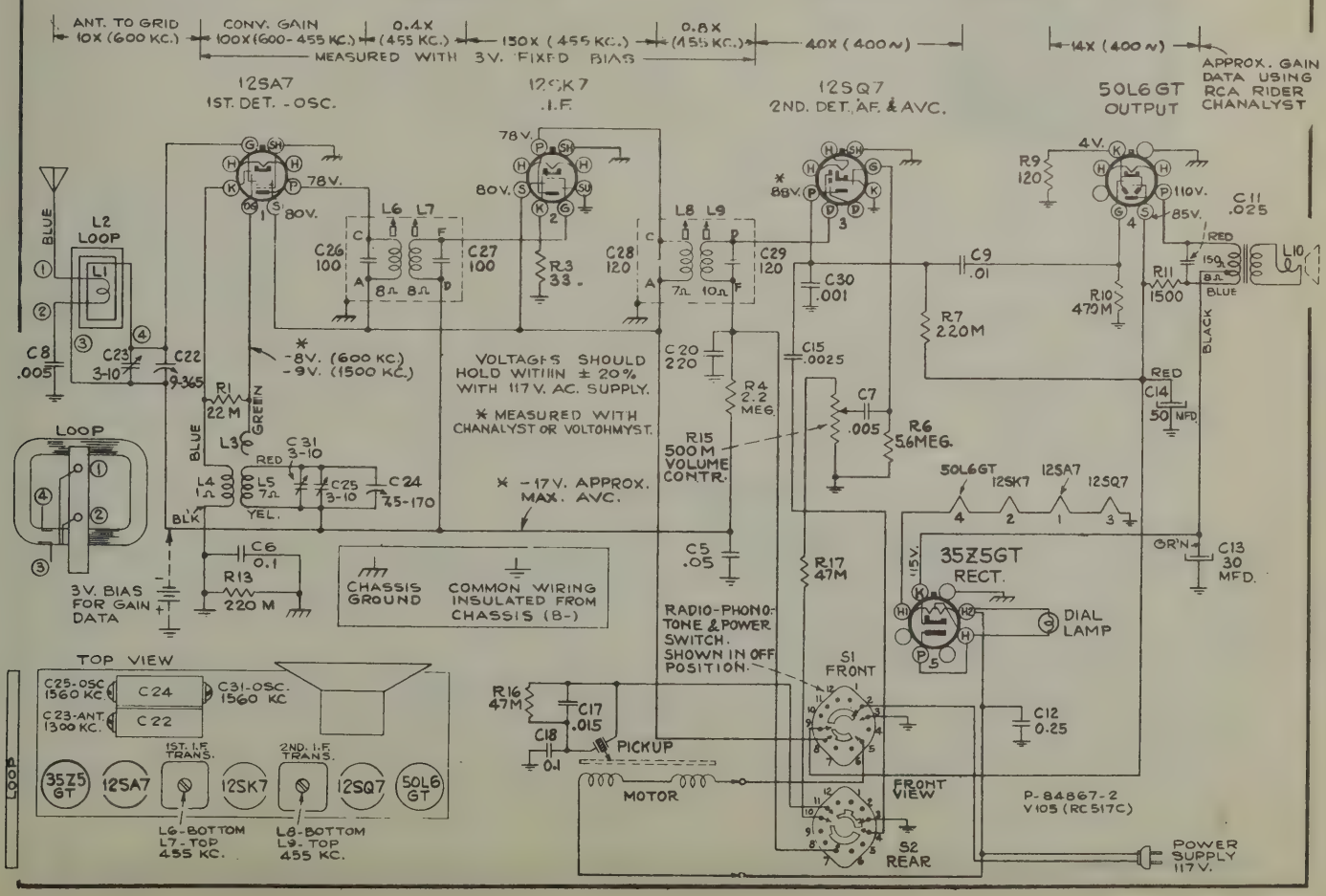
The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

The motor should be lubricated once or twice a year by placing a few drops of S. A. E. 20 (or equivalent) on the turntable spindle and saturating the oil retaining felt pads on the motor shaft with S. A. E. 10 oil. **Caution—The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.**

**Power Supply.**—Although this model employs an ac-dc chassis, it is not suitable for use on d.c., as this would damage the motor.



RADIOLA R560P



# MODELS 110-K and 110-K-2

## Chassis No. RC-513

## Ten-Tube, Four-Band, AC, Superheterodyne Receiver

MODEL 110K

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Broadcast "A" | 540-1,600 kc |
| Medium Wave "B" | 1.4-4.0 mc |
| Short Wave "C" | 5.8-18.0 mc |
| SPREAD BAND | 9.35-9.85 mc |

INTERMEDIATE FREQUENCY ..... 455 kc

PUSH-BUTTON RANGES

| | |
|---|---|
| One station between approximately | 540-1,030 kc |
| Two stations between approximately | 610-1,250 kc |
| Two stations between approximately | 740-1,430 kc |
| One station between approximately | 880-1,550 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Detector, A.V.C., and A-F Amplifier |
| (5) RCA-6SF5 | Phase Inverter |
| RCA-6K6GT (Four) | Power Output |
| (10) RCA-5U4-G | Rectifier |

PILOT LAMPS

(4)... Mazda No. 51, 6.3 volts, 0.20 amp.

POWER OUTPUT RATING

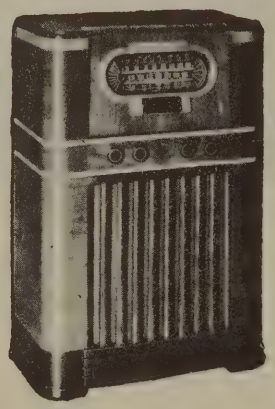
| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER (RL-70L-4)

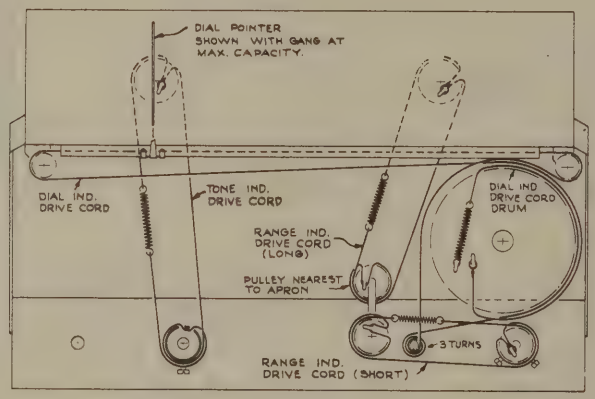
| | |
|---|---|
| Type | 12-inch Electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

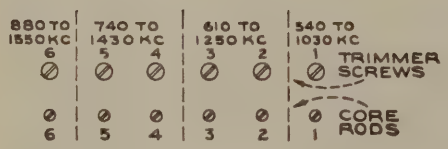
POWER SUPPLY RATINGS

105-125 volts, 50-60 cycles, 135 watts
105-125 volts, 25-60 cycles, 135 watts



*Model 110K-2*


DIAL POINTER SHOWN WITH GANG AT MAX. CAPACITY.
DIAL IND. DRIVE CORD
TONE IND. DRIVE CORD
DIAL IND DRIVE CORD DRUM
RANGE IND. DRIVE CORD (LONG)
PULLEY NEAREST TO APRON
3 TURNS
RANGE IND. DRIVE CORD (SHORT)




### Failure to Oscillate on Push-Button Tuning:

Should a case of non-oscillation on any push-button range be experienced, check the oscillator grid leak to assure that it is 56,000 ohms. Some sets employed a 33,000 ohm leak which was occasionally found troublesome with low line voltage.

### Low-Frequency Oscillator Push-Button Coil:

To ensure low-frequency coverage on the push-button oscillator coils in these models, a high-inductance coil, Stock No. 37133, is used for the 540-1,030 kc push-button oscillator ranges.

## Push Button Adjustment

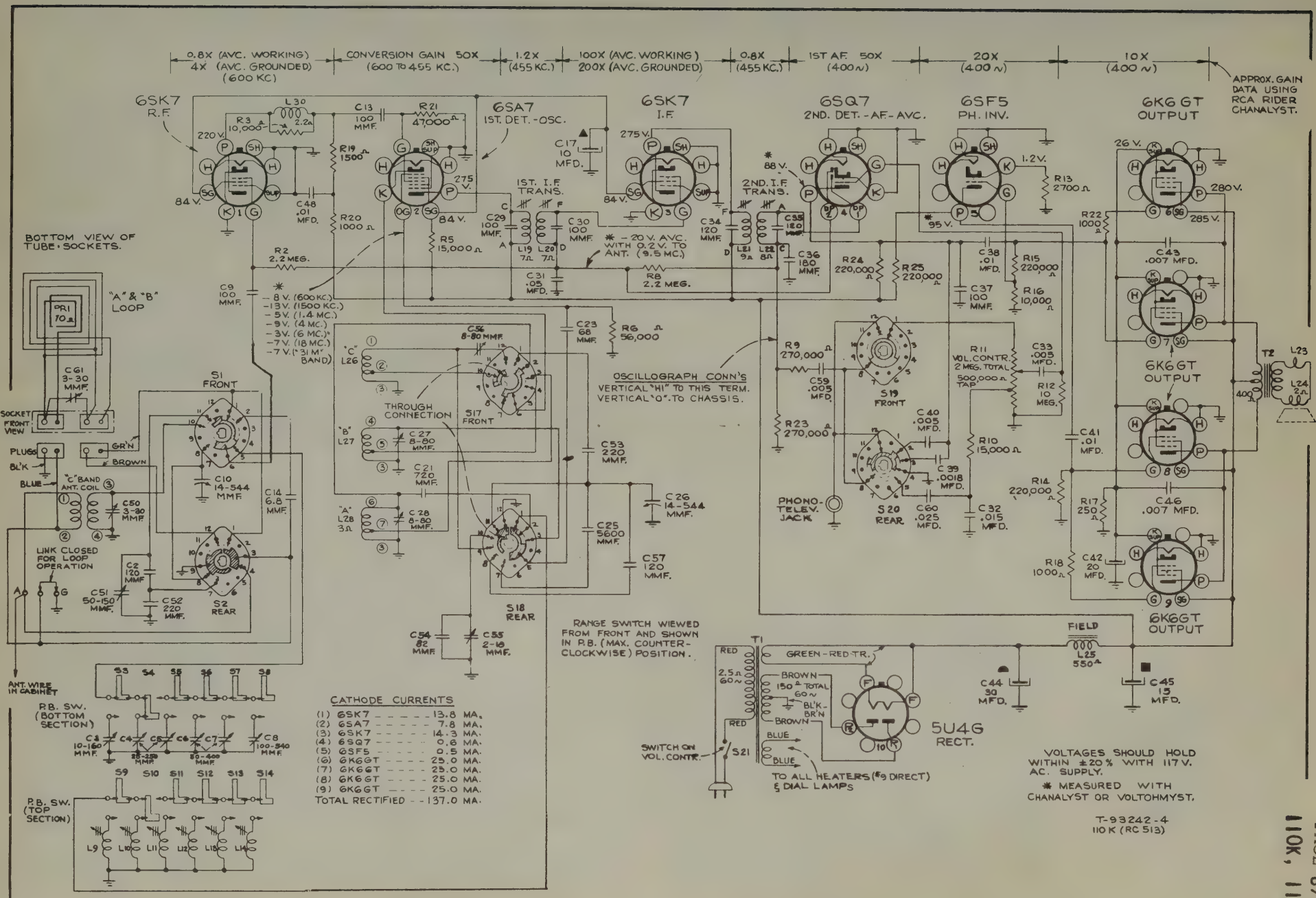
The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-14) to receive the station.
4. After oscillator core is set correctly, adjust C-8 for maximum output.
   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Owing to the relatively high r-f gain, it may be found that a given station can be tuned in at several different settings of the magnetite-core oscillator push-button coils. In such cases, it is advisable to unscrew the loop push-button trimmers to minimum capacity before adjusting the magnetite cores.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L-9 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.




CATHODE CURRENTS

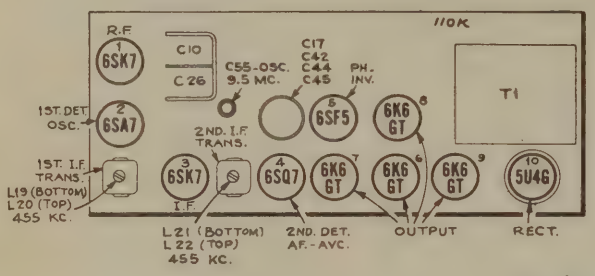
| | | |
|---|---|---|
| (1) | 6SK7 | 13.8 MA. |
| (2) | 6SA7 | 7.8 MA. |
| (3) | 6SK7 | 14.3 MA. |
| (4) | 6SQ7 | 0.6 MA. |
| (5) | 6SF5 | 0.5 MA. |
| (6) | 6K6GT | 25.0 MA. |
| (7) | 6K6GT | 25.0 MA. |
| (8) | 6K6GT | 25.0 MA. |
| (9) | 6K6GT | 25.0 MA. |
| TOTAL RECTIFIED | | 137.0 MA. |

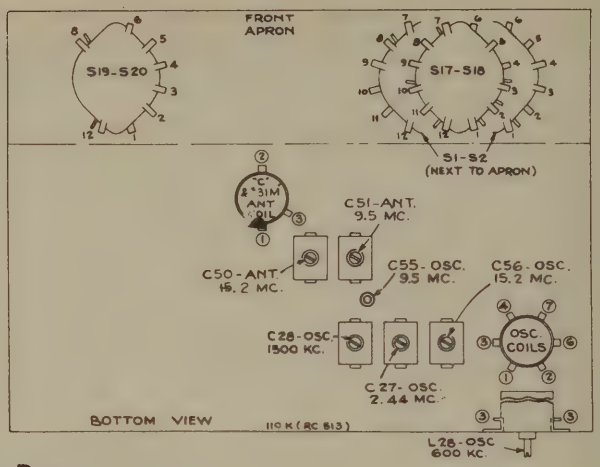
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

T-93242-4
110 K (RC 513)

REFER TO MODEL 111K
FOR ALIGNMENT PROCEDURE




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-513)** |
| 35966 | Board—Antenna-Ground terminal board |
| 36060 | Bracket—Bracket and stud to hold shutter |
| 35974 | Bracket—Dial support assembly |
| 35795 | Calibrator—Drive drum calibrator |
| 36051 | Capacitor—Air trimmer—2-18 mmfd. |
| 35804 | Capacitor—Trimmer bank, one 10-160 mmfd., two 25-250 mmfd., two 50-400 mmfd., and one 100-540 mmfd. sections |
| 36053 | Capacitor—Trimmer, 1 section 3-30 mmfd., and 1 section 50-150 mmfd. |
| 14079 | Capacitor—6-8 mmfd. |
| 36052 | Capacitor—Trimmer, 3 sections 8-80 mmfd. |
| 13057 | Capacitor—68 mmfd. |
| 36097 | Capacitor—82 mmfd.—Ceramic |
| 12720 | Capacitor—100 mmfd. |
| 31706 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 35877 | Capacitor—720 mmfd. |
| 13895 | Capacitor—5,600 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 36045 | Capacitor—Electrolytic, one 30 mfd. 450 volts, one 15 mfd. 450 volts, one 10 mfd. 450 volts, and one 20 mfd. 25 volts sections |
| 31382 | Clip—Push button coil clip |
| 35965 | Coil—"C" and 31 meter band antenna coil |
| 35789 | Coil—Oscillator coil |
| 35803 | Coil—Push button coil (oscillator), less core |
| 35960 | Condenser—2-gang variable tuning |
| 35962 | Control—Volume control and switch |
| 32634 | Cord—Band shutter cord (length required approx. 24 inches) |
| 34662 | Cord—Pointer drive cord (length required approx. 65 inches) |
| 32634 | Cord—Range switch cord (length required approx. 27 inches) |
| 32634 | Cord—Tone shutter cord (length required approx. 22 inches) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 35871 | Core—Push button coil core and stud |
| 35794 | Drum—Variable condenser drum—less calibrator |
| 35970 | Indicator—Dial scale pointer |
| 36048 | Indicator—Range indicator |
| 36047 | Indicator—Tone indicator |
| 14028 | Nut—Clamping nut for air trimmer |
| 36046 | Plate—Dial back plate and pulleys assembly—less tone and range shutters |
| 36009 | Plug—2-prong male plug for loop cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 36055 | Pulley—For tone control shaft |
| 36057 | Pulley—Pulley and hub |
| 36056 | Pulley—Pulley and spacer |
| 36096 | Resistor—250 ohms, 2 watts, flexible |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 30654 | Resistor—1,500 ohms, ½ watt |
| 14024 | Resistor—2,700 ohms, ½ watt |
| 14559 | Resistor—10,000 ohms, ½ watt |
| 35876 | Resistor—10,000 ohms |
| 12695 | Resistor—15,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watts |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 31482 | Screw—No. 8-32 sq. hd. set screw for pulley, Stock No. 36055 |
| 14350 | Screw—No. 8-32 sq. hd. set screw for pulley, Stock No. 36057, and drive drum, Stock No. 35795 |
| 35968 | Shaft—Tuning knob shaft and pulley |
| 36059 | Shield—Bottom shield for 60 cycle transformer |
| 36058 | Shield—Top shield for 60 cycle transformer |
| 36050 | Shutter—Range shutter |
| 36049 | Shutter—Tone shutter |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono. input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Indicator drive cord tension spring |
| 35967 | Switch—Push button switch—less coils and trimmers |
| 36054 | Switch—Range switch |
| 35963 | Switch—Tone switch |
| 35790 | Transformer—Second I-F transformer |
| 35636 | Transformer—First I-F transformer |
| 36164 | Transformer—Power transformer—105-120 volts, 25-60 cycle |
| 36044 | Transformer—Power transformer—105-120 volts, 50-60 cycle—less end shields |
| 33726 | Washer—"C" washer for pulley, Stock No. 36056, and shutters, Stock Nos. 36049 and 36050 |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-70L4)** |
| 13867 | Cap—Dust cap |
| 36143 | Coil—Field coil—550 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 36144 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36006 | Bezel—Dial bezel |
| 36005 | Button—Push button—dark brown |
| 36411 | Button—Push button—light brown |
| 35998 | Capacitor—Trimmer for loop |
| 36002 | Coil—Loading coil for loop |
| 36148 | Decalcomania—Control panel decal |
| 36147 | Dial—Glass dial scale |
| 36004 | Knob—Control knobs—dark brown |
| 36410 | Knob—Control knobs—light brown |
| 11765 | Lamp—Dial lamp |
| 11891 | Lamp—Pilot lamp for tone and range indicators |
| 35997 | Loop—"A" and "B" loop |
| 36149 | Marker—Station selector push button markers |
| 35029 | Mounting—Speaker mounting |
| 33545 | Shield—Lamp shield for indicator lamps |
| 35999 | Socket—Connecting socket for loop |
| 36802 | Spring—Conical spring for loop |
| 14270 | Spring—Retaining spring for control knobs |
| 34053 | Spring—Retaining spring for push button |

# MODEL 111-K

## Chassis No. RC-513A

## Eleven-Tube, Plus Magic Eye, Four-Band, AC, Superheterodyne

### Electrical and Mechanical Specifications

**Frequency Ranges**

| | |
|---|---|
| Broadcast "A" | 540-1,600 kc |
| Medium Wave "B" | 1.6-4.0 mc |
| Short Wave "C" | 5.8-18.0 mc |
| Spread Band | 9.35-9.85 mc |

**Intermediate Frequency** ..... 455 kc

**Push-Button Ranges**

Two stations between approximately 540-1,030 kc
Two stations between approximately 610-1,250 kc
Two stations between approximately 740-1,430 kc
Two stations between approximately 880-1,550 kc

**Tube Complement**

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6H6 | 2nd Detector, A.V.C. |
| (5) RCA-6SF5 | Audio |
| (6) RCA-6SF5 | Phase Inverter |
| RCA-6K6GT (Four) | Power Output |
| (11) RCA-5U4-G | Rectifier |
| (12) RCA-6U5 | Magic Eye |

**Loudspeaker (RL-70L-4)**

Type ..... 12-inch Electrodynamic
V.C. Impedance ..... 2.2 ohms at 400 cycles

**Power Supply Ratings**

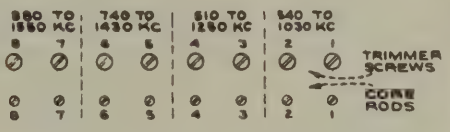
105-125 volts, 50-60 cycles, 140 watts
105-125 volts, 25-60 cycles, 140 watts

**Power Output Rating**

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 43⅜ | 32⅛ | 15 |

Tuning Drive Ratio ..... 15-1




### Push Button Adjustment

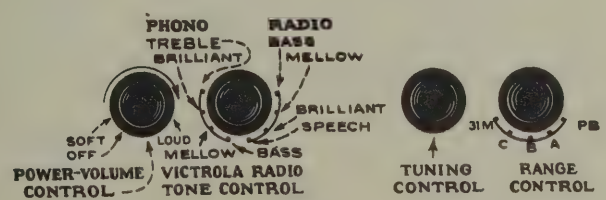
The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

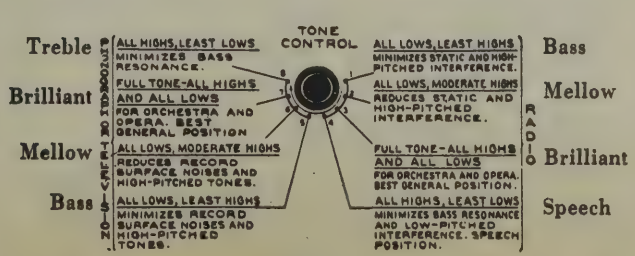
In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

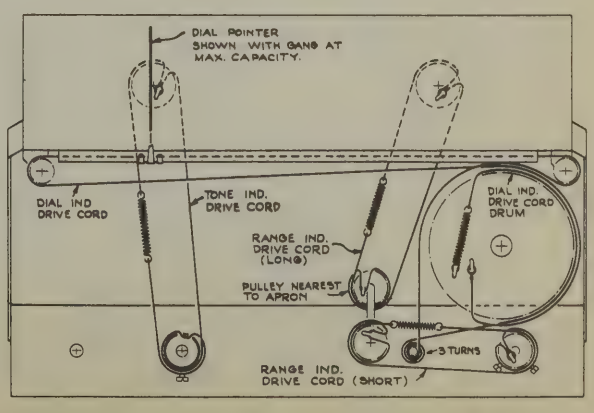
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-32) to receive the station.
4. After oscillator core is set correctly, adjust C63 for maximum output.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

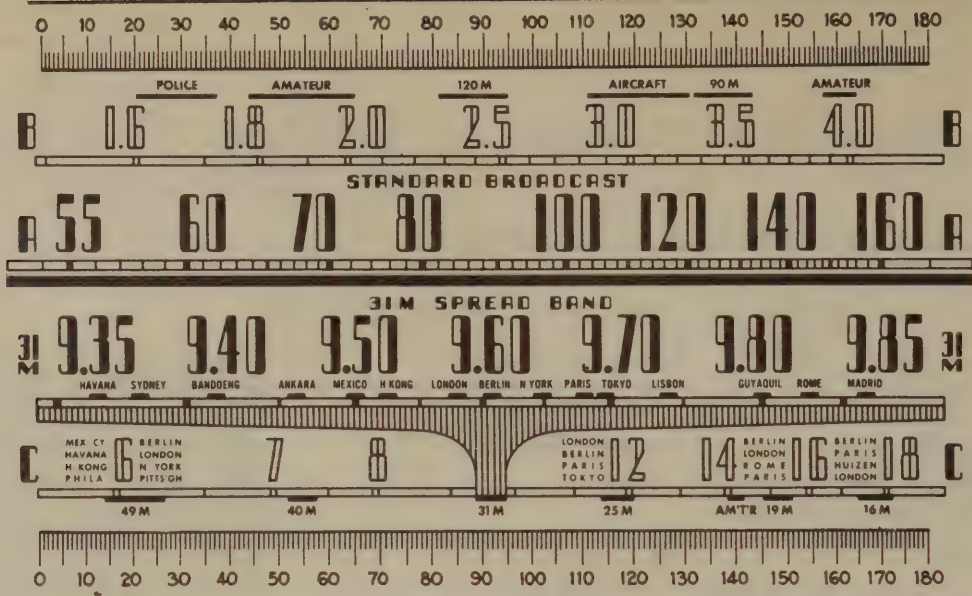
Owing to the relatively high r-f gain, it may be found that a given station can be tuned in at several different settings of the magnetite-core oscillator push-button coils. In such cases, it is advisable to unscrew the loop push-button trimmers to minimum capacity before adjusting the magnetite-cores.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L9 or L10 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.





DIAL POINTER SHOWN WITH GANG AT MAX. CAPACITY.
DIAL IND. DRIVE CORD
TONE IND. DRIVE CORD
DIAL IND. DRIVE CORD DRUM
RANGE IND. DRIVE CORD (LONG)
PULLEY NEAREST TO APRON
3 TURNS
RANGE IND. DRIVE CORD (SHORT)


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
POLICE
AMATEUR
120 M
AIRCRAFT
90 M
AMATEUR
B 1.6 1.8 2.0 2.5 3.0 3.5 4.0 B
STANDARD BROADCAST
A 55 60 70 80 100 120 140 160 A
31 M SPREAD BAND
31 M 9.35 9.40 9.50 9.60 9.70 9.80 9.85 31 M
HAVANA SYDNEY BANDOENG ANKARA MEXICO H KONG LONDON BERLIN N YORK PARIS TOKYO LISBON GUYAQUIL ROME MADRID
C MEX CY HAVANA H KONG PHILA 6 BERLIN LONDON N YORK PITTS'GH 7 8 LONDON BERLIN PARIS TOKYO 12 14 BERLIN LONDON ROME PARIS 16 BERLIN PARIS HUIZEN LONDON 18 C
49 M 40 M 31 M 25 M AM'TR 19 M 16 M
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or Volt Ohmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration for Alignment.**—The dial calibration for alignment purposes can be set up in two ways:

1. The dial may be removed from the cabinet by sliding out the two spring pieces which clamp it in its mounting position. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial placed on the frame so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced including the fibre light shields which are folded under the ends of the glass scale.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

**Pointer for Calibration Scale.**—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.

**Spread-Band Alignment.**—Make final adjustment of "31-meter" trimmers during actual reception of a station of known frequency near 9.5 megacycles:

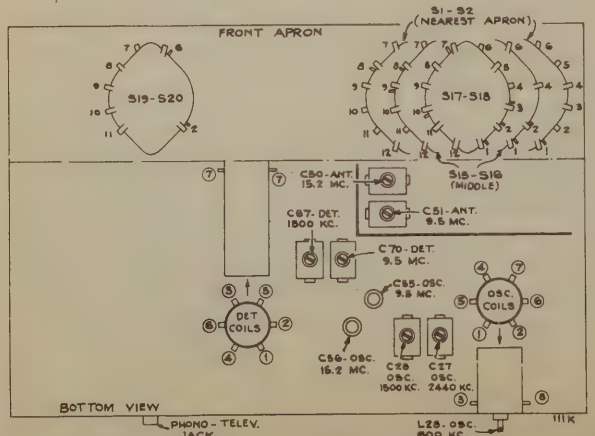
* Use minimum capacity peak if two peaks can be obtained.

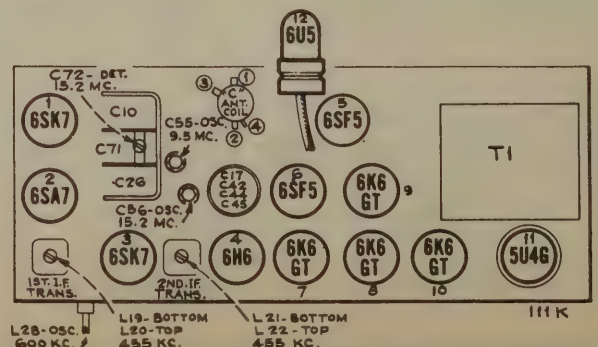
** Use maximum capacity peak if two peaks can be obtained.

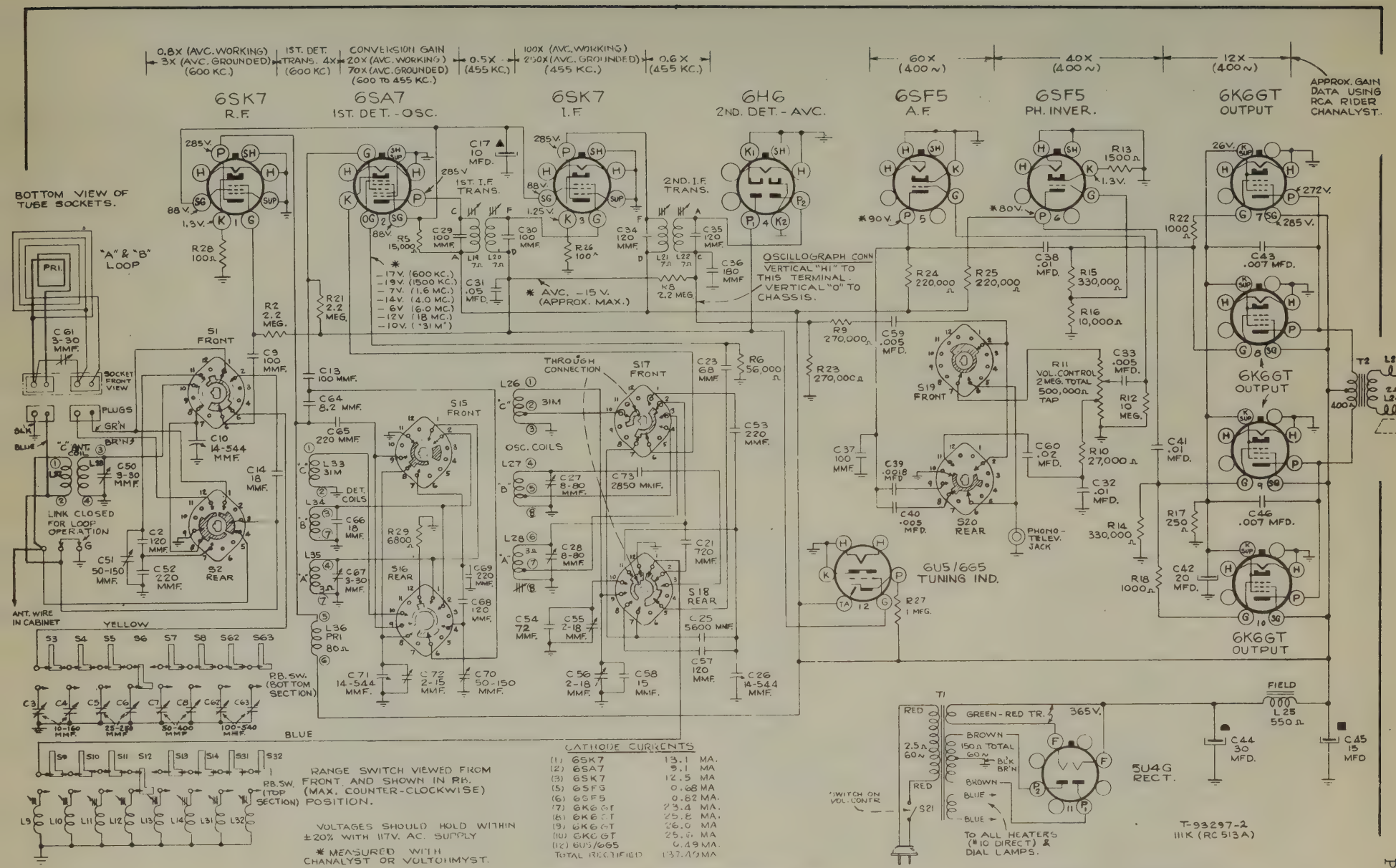
**NOTE:** Oscillator tracks 455 kc above signal on all bands.

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | "C" band quiet point at 18 mc end of dial | L21 and L22 (2nd I-F trans.) |
| 2 | 1st det. grid in series with .01 mfd. | | | L19 and L20 (1st I-F trans.) |
| 3 | Antenna terminal (A) in series with 47 mmfd. (link closed) | 15.2 mc | 15.2 mc (150°) "C" band | C56 (osc.)* C72 (det.)** C50 (ant.)** Rock in C72, C50 |
| 4 | | 9.5 mc | 9.5 mc (64°) "31M" band | C55 (osc.)* C70 (det.) C51 (ant.) Rock in C70, C51 |
| 5 | Green lead on loop plug, in series with 300 ohms | 2.44 mc | 2.44 mc (90.5°) "B" band | C27 (osc.) |
| 6 | | 600 kc | 600 kc (30.5°) "A" band | L28 (osc.) |
| 7 | | 1,500 kc | 1,500 kc (160°) "A" band | C28 (osc.) C67 (det.) |
| 8 | Repeat steps 6 and 7. | | | |
| 9 | Fasten chassis in cabinet, close ant. link, adjust indicator to left-hand end of dial scales with gang closed. | | | |
| 10 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 1,500 kc | 1,500 kc signal "A" band | C61 (ant.) (on loop) |
| 11 | | 600 kc | 600 kc "A" band | L28 (osc.) Rock in |
| 12 | Repeat steps 10 and 11. | | | |

NOTE: C72, C70, C67 used on Model 111K only.




0.8X (AVC. WORKING) 3X (AVC. GROUNDED) (600 KC.)
1ST. DET. TRANS. 4X (600 KC)
CONVERSION GAIN 20X (AVC. WORKING) 70X (AVC. GROUNDED) (600 TO 455 KC.)
0.5X (455 KC.)
100X (AVC. WORKING) 250X (AVC. GROUNDED) (455 KC.)
0.6X (455 KC.)
60X (400 ~)
40X (400 ~)
12X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST.
6SK7 R.F.
6SA7 1ST. DET. - OSC.
6SK7 I.F.
6H6 2ND. DET. - AVC.
6SF5 A.F.
6SF5 PH. INVER.
6K6GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS.
"A" & "B" LOOP
1ST. I.F. TRANS.
2ND. I.F. TRANS.
OSCILLOGRAPH CONN VERTICAL "HI" TO THIS TERMINAL. VERTICAL "O" TO CHASSIS.
* AVC. -15 V. (APPROX. MAX.)
-17V. (600 KC.) -19V. (1500 KC.) -7V. (1.6 MC.) -14V. (4.0 MC.) -6V. (6.0 MC.) -12V. (18 MC.) -10V. ("31 M")
OSC. COILS
THROUGH CONNECTION
LINK CLOSED FOR LOOP OPERATION
ANT. WIRE IN CABINET
YELLOW
BLUE
R.B. SW. (BOTTOM SECTION)
R.B. SW. (TOP SECTION)
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN R.B. (MAX. COUNTER-CLOCKWISE) POSITION.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117V. AC. SUPPLY
* MEASURED WITH CHANALYST OR VOLTOHMYST.
CATHODE CURRENTS
(1) 6SK7 13.1 MA.
(2) 6SA7 9.1 MA
(3) 6SK7 12.5 MA
(5) 6SF5 0.68 MA
(6) 6SF5 0.82 MA.
(7) 6K6GT 23.4 MA.
(8) 6K6GT 25.8 MA.
(9) 6K6GT 26.0 MA
(10) 6K6GT 25.6 MA
(12) 6U5/6G5 0.49 MA.
TOTAL RECTIFIED 137.49 MA
6U5/6G5 TUNING IND.
5U4G RECT.
PHONO-TELEV. JACK
TO ALL HEATERS (#10 DIRECT) & DIAL LAMPS.
T-93297-2 111K (RC 513A)

## Low-Frequency Oscillator Push-Button Coil:

To ensure low-frequency coverage on the push-button oscillator coils in these models, a high-inductance coil, Stock No. 37133, is used for the 540-1,030 kc push-button- oscillator ranges.

## Failure to Oscillate on Push-Button Tuning:

Should a case of non-oscillation on any push-button range be experienced, check the oscillator grid leak to assure that it is 56,000 ohms. Some sets employed a 33,000 ohm leak which was occasionally found troublesome with low line voltage.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

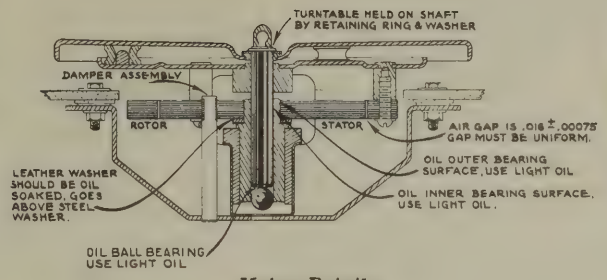
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-513-A)** |
| 35966 | Board—Antenna-Ground terminal board |
| 36060 | Bracket—Bracket and stud to hold shutter |
| 35974 | Bracket—Dial support assembly |
| 35795 | Calibrator—Drive drum calibrator |
| 36051 | Capacitor—Air trimmer—2-18 mmfd. |
| 13001 | Capacitor—8.2 mmfd. |
| 36169 | Capacitor—Trimmer capacitor—2 sections of 8-80 mmfd. each |
| 36165 | Capacitor—Trimmer capacitor comprising 2 sections of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 2 sections of 100-540 mmfd. |
| 12896 | Capacitor—15 mmfd. |
| 12722 | Capacitor—18 mmfd. |
| 36168 | Capacitor—Trimmer capacitor—1 section 50-150 mmfd., and 1 section 3-30 mmfd. |
| 36803 | Capacitor—65 mmfd., ceramic |
| 13057 | Capacitor—68 mmfd. |
| 12720 | Capacitor—100 mmfd. |
| 31706 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 35877 | Capacitor—720 mmfd. |
| 34787 | Capacitor—2,850 mmfd. |
| 13895 | Capacitor—5,600 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 36045 | Capacitor—Electrolytic—one 30 mfd. 450 volts, one 15 mfd. 450 volts, one 10 mfd. 450 volts, and one 20 mfd. 25 volts sections |
| 31382 | Clip—Push button coil clip |
| 34285 | Clip—Tuning indicator clip and screw |
| 35965 | Coil—"C" and 31-meter band antenna coil |
| 35789 | Coil—Oscillator coil |
| 35803 | Coil—Push button coil (oscillator), less core |
| 36170 | Coil—R.F. coil |
| 36158 | Condenser—3-gang variable tuning |
| 35962 | Control—Volume control and switch |
| 32634 | Cord—Band shutter cord (Length required approximately 24 inches) |
| 34862 | Cord—Pointer drive cord (Length required approximately 65 inches) |
| 32634 | Cord—Range switch cord (Length required approximately 27 inches) |
| 32634 | Cord—Tone shutter cord (Length required approximately 22 inches) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 35871 | Core—Push button coil core and stud |
| 35794 | Drum—Variable condenser drum—less calibrator |
| 35970 | Indicator—Dial scale pointer |
| 36048 | Indicator—Range indicator |
| 36047 | Indicator—Tone indicator |
| 14028 | Nut—Clamping nut for air trimmer |
| 36166 | Plate—Dial back plate and pulleys—less tone and range shutters |
| 36009 | Plug—2-prong male plug for loop cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 36055 | Pulley—Pulley for tone control shaft |
| 36057 | Pulley—Pulley and hub |
| 36056 | Pulley—Pulley and spacer |
| 14439 | Resistor—100 ohms, ½ watt |
| 36096 | Resistor—250 ohms, 2 watts—flexible |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 14024 | Resistor—2,700 ohms, ½ watt |
| 12265 | Resistor—6,800 ohms, ½ watt |
| 14559 | Resistor—10,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watts |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 12013 | Resistor—1 meg., 1/10 watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 31482 | Screw—No. 8-32 square head set screw for pulley Stock No. 36055 |
| 14350 | Screw—No. 8-32 square head set screw for pulley Stock No. 36057 and drive drum Stock No. 35795 |
| 35968 | Shaft—Tuning knob shaft and pulley |
| 36059 | Shield—Bottom shield for 60 cycle transformer |
| 36058 | Shield—Top shield for 60 cycle transformer |
| 36050 | Shutter—Range shutter |
| 36049 | Shutter—Tone shutter |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 13871 | Socket—Tuning indicator socket |
| 31418 | Spring—Indicator drive cord tension spring |
| 36159 | Switch—Push button switch—less coils and trimmers |
| 36167 | Switch—Range switch |
| 35963 | Switch—Tone switch |
| 35636 | Transformer—First I-F transformer |
| 35790 | Transformer—Second I-F transformer |
| 36164 | Transformer—Power transformer—105-120 volts, 25-60 cycles |
| 36044 | Transformer—Power transformer—105-120 volts, 50-60 cycles—less end shields |
| 33726 | Washer—"C" washer for pulley Stock No. 36056 and shutters Stock Nos. 36049 and 36050 |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-70L-4)** |
| 13867 | Cap—Dust cap |
| 36143 | Coil—Field coil—550 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 36144 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36005 | Button—Push button—dark brown |
| 36411 | Button—Push button—light brown |
| 35998 | Capacitor—Trimmer for loop |
| 36002 | Coil—Loading coil for loop |
| 36148 | Decalcomania—Control panel decal |
| 36172 | Dial—Glass dial scale |
| 36604 | Escutcheon—Dial scale escutcheon |
| 36004 | Knob—Control knobs—dark brown |
| 36410 | Knob—Control knobs—light brown |
| 11765 | Lamp—Dial lamp |
| 11891 | Lamp—Pilot lamp for tone and range indicators |
| 36171 | Loop—"A" and "B" loop |
| 36149 | Marker—Station selector push button markers |
| 35029 | Mounting—Speaker mounting |
| 33545 | Shield—Lamp shield for indicator lamps |
| 35999 | Socket—Connecting socket for loop |
| 36802 | Spring—Conical spring for loop |
| 14270 | Spring—Retaining spring for control knobs |
| 34053 | Spring—Retaining spring for push button |

# MODELS U-111, and U-112

**Chassis No. RC-341 RC-341C RC-341M RC-341CM**

## Five-Tube, Single-Band, A-C, Victrolas

*Model U-111*


TURNTABLE HELD ON SHAFT BY RETAINING RING & WASHER
DAMPER ASSEMBLY
ROTOR
STATOR
AIR GAP IS .016 ± .00075 GAP MUST BE UNIFORM.
OIL OUTER BEARING SURFACE, USE LIGHT OIL
LEATHER WASHER SHOULD BE OIL SOAKED, GOES ABOVE STEEL WASHER.
OIL INNER BEARING SURFACE, USE LIGHT OIL.
OIL BALL BEARING USE LIGHT OIL

*Motor Details*

*Model U-112*

## Electrical Specifications RC-341

Frequency Range ..... 540-1,720 kc
R-F Alignment Frequency ..... 1,500 kc (osc., ant.)
Intermediate Frequency ..... 455 kc

RADIOTRON COMPLEMENT

(1) RCA-6A8 ..... First Det., and Osc.
(2) RCA-6K7 ..... Intermediate Amp.
(3) RCA-6Q7-G ..... Second Det., A-F, and A.V.C.
(4) RCA-6K6-G ..... Power Output
(5) RCA-5Y3-G ..... Rectifier
Dial Lamp ..... Mazda No. 44, 6.3 volts, 0.25 amps.

POWER OUTPUT (125-volt, a-c supply)

Undistorted ..... 2.0 watts
Maximum ..... 3.5 watts

LOUDSPEAKER

Type ..... 5-inch electrodynamic
V-C impedance ..... 5 ohms at 400 cycles

POWER SUPPLY RATINGS

Rating A-6 ..... 105-125 volts, 60 cycles, 80 watts
Rating A-5 ..... 105-125 volts, 50 cycles, 80 watts

PHONOGRAPH ..... Synchronous (manual starting)
Records ..... 10-inch and 12-inch, 78 r.p.m.
Pickup ..... Crystal, 80,000 ohms at 1,000 c.p.s.
Average Output of Pickup ..... 1½-volts, at 1,000 c.p.s. across ¼ meg. load

## MODELS U-112 AND LATE U-111

Model U-112 is a five-tube superheterodyne table-type Victrola similar to Model U-111, except that the cabinet is enlarged to permit playing 12-inch records with the lid closed. The cabinet dimensions are—Height 11¾ inches, Width 15¾ inches, Depth 13⅜ inches. The shipping weight is approximately 21 pounds.

**The service data for Model U-111 applies to Model U-112, with the following exceptions:**

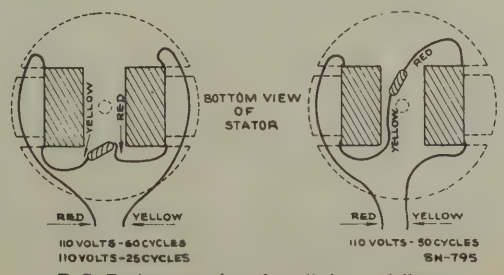
1. The rectifier tube is RCA-5W4 in U-112.
2. A 12,000 ohm resistor (R13) is added in series with C22 across the pickup in Model U-112.
3. Model U-112 is made in three power supply ratings:
   Rating A-6 ..... 105-125 volts, 60 cycles, 80 watts
   Rating A-5 ..... 105-125 volts, 50 cycles, 80 watts
   Rating B-2 ..... 105-125 volts, 25 cycles, 80 watts
4. The 25 cycle power transformer for U-112 has the following d-c resistance:
   Primary ..... 13.7 ohms
   High-voltage secondary ..... 1,190 ohms
5. The speaker in Model U-112 is marked 84265-4 and has the following d-c resistances:
   Field coil ..... 1,300 ohms
   Primary of output transformer ..... 420 ohms
   Voice coil ..... 2 ohms

**Later production of both the U-111 (RC-341M) and U-112 (RC-341CM) incorporate the following changes:**

1. The antenna coil is changed from Stock No. 30894 (1 ohm primary) to No. 32338 (35 ohm primary). No. 32338 may be used to replace No. 30894.
2. A 270 mmf. capacitor (C23) is connected from the triode plate of the 6Q7-G to chassis.

**The alignment procedure for Model U-112 is the same as for U-111. The following additional alignment data applies to both models:**

On r-f alignment, turn the gang condenser to minimum (all the way out of mesh), and with the test-oscillator tuned to 1,720 kc, align the oscillator trimmer C18. Adjust the test-oscillator to 1,500 kc, tune the receiver to the 1,500 kc signal, and align the antenna trimmer C3 for maximum output.




D-C Resistance of each coil is as follows:
110 volts, 50 cycles, and 60 cycles ..... 82 ohms
110 volts, 25 cycles ..... 250 ohms

**Hum and Vibration.**—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)

### Precautionary Lead Dress

1. Dress power leads to phono motor switch away from the audio wiring.
2. Dress power cord and motor cable to end of chassis (free from volume control wiring).
3. Dress pilot lamp lead away from 6Q7G grid.
4. Capacitors C13 and C15 (located at volume control) must be dressed at right angles to each other and as far apart as possible.

## Alignment Procedure

**Cathode-ray Alignment** is the preferable method.

**Output meter alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

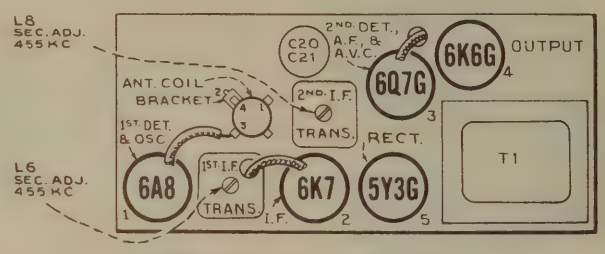
**Test-oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

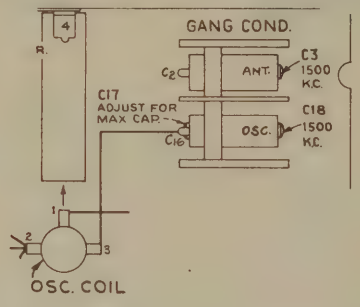
| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| No. 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F Transformer) |
| No. 2 | 6A8 1st-det. grid cap, in series with .01 mfd. | 455 kc | | L5 and L6 (1st I-F Transformer) |
| No. 3 | Antenna lead, in series with 200 mmfd. | 1,500 kc | 1,500 kc | C18* (osc.) C3 (antenna) |

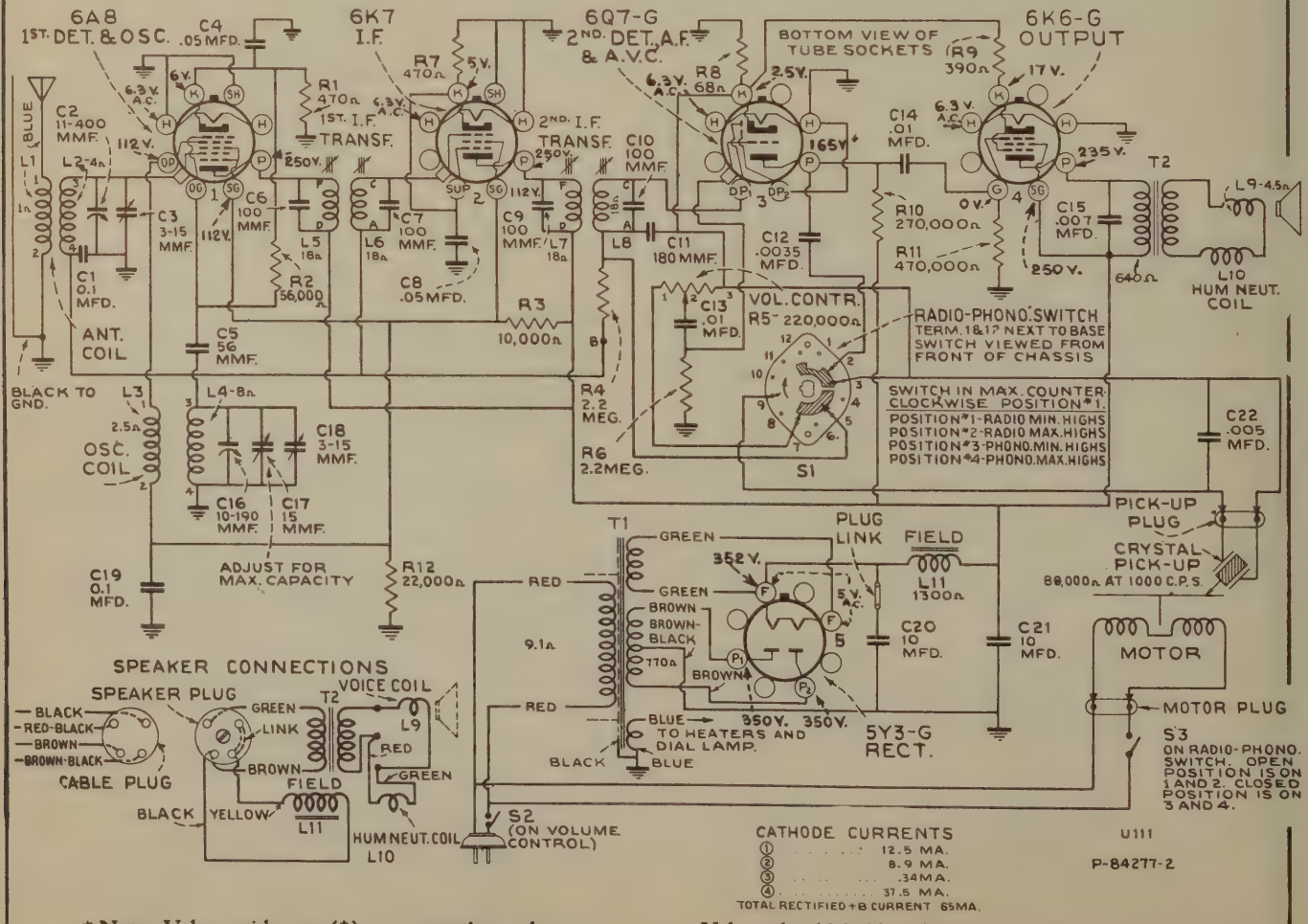
* Trimmer C17 on gang condenser should be screwed clockwise for maximum capacity before adjusting C18.

**Pre-setting dial.**—With gang condenser in full mesh, move dial pointer to coincide with horizontal lines. This is a friction adjustment.

For additional details, refer to booklet "RCA Victor Receiver Alignment."



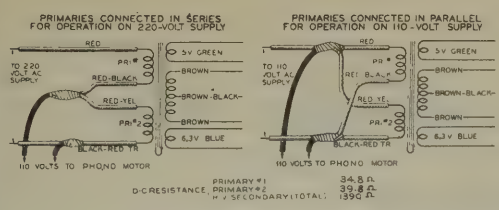




CATHODE CURRENTS
① . . . . . 12.5 MA.
② . . . . . 8.9 MA.
③ . . . . . .34 MA.
④ . . . . . 37.5 MA.
TOTAL RECTIFIED + B CURRENT 65 MA.

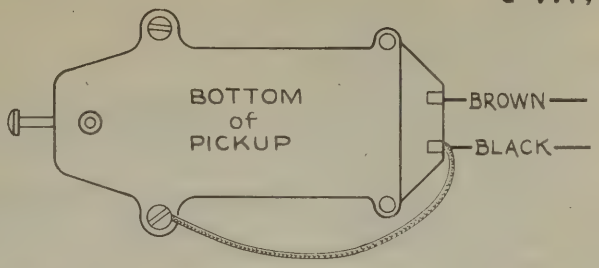
U111
P-84277-2

*** Note:** Values with star (*) are **operating** voltages.
Values not starred are actual **measured** voltages.
Measurements made to chassis unless otherwise indicated.

Values should hold within approximately ± 20% for 117-volt 60-cycle supply.




*Connections for No. 30888 Replacement Transformer*




# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL U-111** |
| | **RECEIVER ASSEMBLIES** |
| 4287 | Body—Pickup cable connector body |
| 31077 | Bracket—Dial bracket, and indicator shaft and bearing assembly |
| 4286 | Bushing—Pickup cable connector bushing and ferrule insert |
| 11350 | Cap—Grid connector cap |
| 12723 | Capacitor—56 mmfd. (C5) |
| 30904 | Capacitor—100 mmfd. (C6, C7, C9, C10) |
| 13003 | Capacitor—180 mmfd. (C11) |
| 30303 | Capacitor—.0035 mfd. (C12) |
| 4838 | Capacitor—.005 mfd. (C22) |
| 5148 | Capacitor—.007 mfd. (C15) |
| 14393 | Capacitor—.01 mfd. (C13, C14) |
| 30882 | Capacitor—.05 mfd. (C4, C8) |
| 30899 | Capacitor—0.1 mfd. (C1, C19) |
| 31099 | Capacitor—Comprising 2 sections each 10 mfd. (C20, C21) |
| 30894 | Coil—Antenna coil (L1, L2) |
| 31098 | Coil—Oscillator coil (L3, L4) |
| 31097 | Condenser—2-gang variable tuning condenser (C2, C3, C16, C17, C18) |
| 30877 | Cord—Indicator drive cord |
| 30905 | Core—Adjustable core for i-f transformers |
| 31078 | Dial—Station selector dial scale and holder |
| 30896 | Indicator—Station selector indicator pointer |
| **11891** | Lamp—Dial lamp |
| 14281 | Resistor—68 ohms, ½ watt (R8) |
| 30539 | Resistor—390 ohms, 1 watt (R9) |
| 30546 | Resistor—470 ohms, ½ watt (R1, R7) |
| 31106 | Resistor—10,000 ohms, wire wound, 3 watt (R3) |
| 30736 | Resistor—22,000 ohms, 1 watt (R12) |
| 12286 | Resistor—56,000 ohms, ½ watt (R2) |
| 12199 | Resistor—270,000 ohms, ½ watt (R10) |
| 12285 | Resistor—470,000 ohms, ½ watt (R11) |
| 12679 | Resistor—2.2 meg., ½ watt (R4, R6) |
| 30868 | Socket—2-contact female socket for motor power cable |
| 5040 | Socket—4-contact female socket for speaker cable |
| **31364** | Socket—Dial lamp socket assembly |
| 11196 | Socket—Radiotron socket |
| 30631 | Spring—Indicator drive cord tension spring |
| 4284 | Spring—Pickup cable connector spring |
| 31096 | Switch—Radio-record switch (S1, S3) |
| 30902 | Transformer—First i-f transformer (L5, L6, C6, C7) |
| 30903 | Transformer—Second i-f transformer (L7, L8, C9, C10) |
| 30891 | Volume Control and power switch (R5, S2) |
| 4285 | Washer—Pickup cable connector insulating washer |
| | **MOTOR ASSEMBLIES** |
| 31045 | Base—Motor support, damper, and bearing cup assembly |
| 31046 | Bearing—Bearing assembly |
| 31041 | Cap—Rubber spindle cap |
| 31047 | Cushion—Rubber cushion for bearing |
| 31034 | Motor—110 volt, 50 cycle—less mounting (M1) |
| 9841 | Motor—110 volt, 60 cycle—complete with mounting (M1) |
| 31040 | Mountings—Turntable top rubber mountings sufficient for one turntable |
| 31037 | Rotor—Turntable and rotor lamination assembly complete for 50 cycle operation |
| 31036 | Rotor—Turntable and rotor lamination assembly complete for 60 cycle operation |
| 31043 | Stator—Stator assembly complete with coils and laminations for 50 cycle operation |
| 31042 | Stator—Stator assembly comprising coils and laminations for 60 cycle operation |
| 31039 | Turntable—Finished turntable top plate only—less rubber mountings (50-60 cycle only) |
| 4083 | Washer—Leather washer |
| 14231 | Washer—Metal spacing washer |

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| 31049 | Base—Pickup arm pivot shaft and base assembly |
| 4286 | Bushing—Bushing and ferrule insert for connector cap |
| 4288 | Cap—Pickup cable connector cap |
| 31050 | Crystal—Pickup crystal and needle screw |
| 9842 | Pickup Crystal and arm complete with mounting—less connector |
| 12539 | Screw—Pickup needle screw |
| | **REPRODUCER ASSEMBLIES (Speaker 84265-1)** |
| 31110 | Cone—Reproducer cone and voice coil (L9) |
| 5039 | Plug—4-prong male plug for reproducer |
| 31109 | Reproducer complete |
| 31111 | Transformer—Output transformer (T2) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 30901 | Crystal—Station selector dial crystal |
| 6113 | Foot—Felt foot for cabinet |
| 13085 | Hinge—Cabinet lid hinge |
| 30863 | Knob—Station selector, volume control or radio-record switch knob |
| 31053 | Mounting—Motor mounting screw assembly complete |
| 31054 | Mounting—Pickup arm mounting nuts, washer and rubber spacer |
| 30870 | Plug—2contact male plug for motor leads |
| 31079 | Screw—Chassis mounting screw and washer |
| 30900 | Spring—Retaining spring for knob Stock No. 30863 |
| 31164 | Support—Cabinet lid support |
| | **MODEL U-112 LATE U-111** |
| | **CHASSIS ASSEMBLIES** |
| 12488 | Capacitor—270 mmfd. (C23) (Late U-111 and late U-112) |
| 32338 | Coil—Antenna coil (L1 and L2) (Late U-111 and late U-112) |
| 30128 | Resistor—12,000 ohms, ½ watt (R13) (U-112 only) |
| 30888 | Transformer—Power transformer, 105-125, 200-250 volts, 50-60 cycles |
| 31445 | Transformer—Power transformer, 105-125 volts, 25-60 cycles (U-112) |
| | **25-CYCLE MOTOR ASSEMBLIES (U-112)** |
| 32077 | Motor—110 volts, 25 cycles, less mounting |
| 32073 | Rotor—Turntable and rotor laminations, complete for 25-cycle motor |
| 32072 | Stator—Stator, stator coils, laminations, and weights for 110-volt, 25-cycle motor |
| 32076 | Turntable—Finished turntable top plate for 25-cycle rotor |
| 32074 | Weights—One upper and one lower weight for 25-cycle stator (2 of each required) |
| 32075 | Weight—Lead ring for 25-cycle rotor |
| | **SPEAKER ASSEMBLIES (U-112) (Speaker 84265-4)** |
| 32503 | Cone—Cone for speaker marked 84265-4 |
| 32504 | Transformer—Output transformer for speaker marked 84265-4 |
| 5039 | Plug—4-prong male plug for reproducer |

For complete speaker, order Stock No. 31109 (84265-1), Replacement Parts for Stock No. 31109 are listed in Service Data for U-111.

**See U-111 Service Data for all Replacement Parts not listed here.**

# MODEL U-115

## CHASSIS No. RC-348E

## Six-Tube, Electric-Tuning, Single-Band, A-C, Superheterodyne Victrola

### Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc

| PUSH BUTTON RANGES: | RC-348E | RC-348E "MOD" | RC-348E "M" |
|---|---|---|---|
| Button No. 1 (left) | 550-980 kc | 550-980 kc | 550-980 kc |
| Button No. 2 | 650-1,080 kc | 550-980 kc | 550-980 kc |
| Button No. 3 | 650-1,080 kc | 650-1,080 kc | 690-1,225 kc |
| Button No. 4 | 850-1,500 kc | 850-1,500 kc | 850-1,500 kc |
| Button No. 5 | 850-1,500 kc | 850-1,500 kc | 850-1,500 kc |

Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6A8-G | First-Det., Oscillator |
| (2) RCA-6K7 | I-F Amplifier |
| (3) RCA-6H6 | 2nd-Det. and A.V.C. |
| (4) RCA-6F5 | Audio Voltage Amplifier |
| (5) RCA-6K6-G | Power Output |
| (6) RCA-5Y3-G | Full-Wave Rectifier |
| Pilot Lamp (1) | Mazda 44, 6.3 volts, .25 amp. |

POWER SUPPLY RATINGS

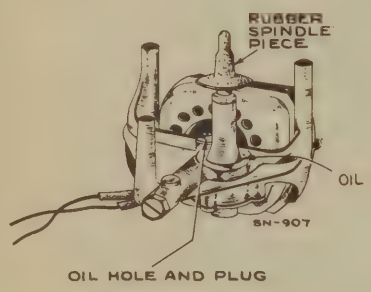
| | |
|---|---|
| A-6 | 105-125 volts, 60 cycles, 100 watts |
| A-5 | 105-125 volts, 50 cycles, 100 watts |
| B-2 | 105-125 volts, 25 cycles, 100 watts |
| C-6 | 105-125, 200-250 volts, 60 cycles, 100 watts |
| C-5 | 105-125, 200-250 volts, 50 cycles, 100 watts |

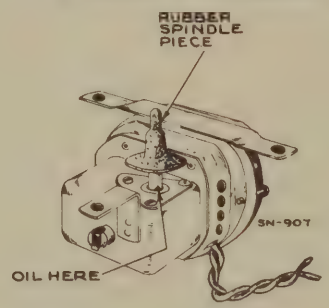
LOUDSPEAKER (84327-1)

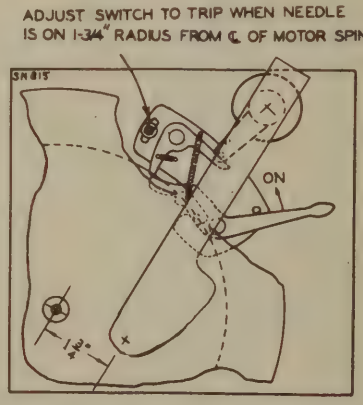
| | |
|---|---|
| Type | 6-inch electrodynamic |
| Voice-coil Impedance at 400 cycles | 2.6 ohms |

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) | 14-3/16 | 16-13/16 | 13¾ |
| Chassis Base Dimensions (inches) | 3 | 11¼ | 5 |
| Over-all Chassis Height | | | 9¼ inches |
| Weight | 27 lbs. (net) | 34½ lbs. (shipping) | |
| Tuning Drive Ratio | | | 6 to 1 |

### Victrola Mechanism




*Motors Used in Model U-115*

At left, cast-frame type, Drawing No. 84430
At right, drawn-metal type, Drawing No. 84484

The crystal pickup is sealed in a metal case as protection against extreme changes of climate. If failure occurs, do not attempt to repair the unit, but install a new crystal unit.

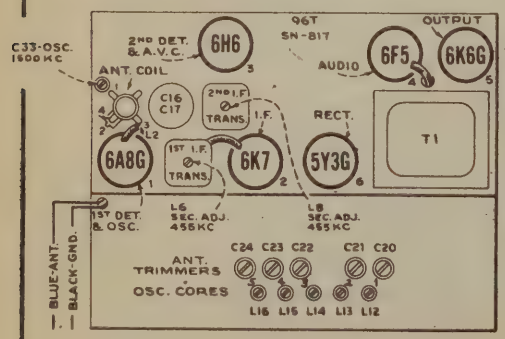
The phonograph motor is a self-starting constant-speed induction type. Two styles of motor are employed: One style (drawing No. 84430) has a cast frame and mounts from below the motorboard. The other style (drawing No. 84484) has a drawn metal case, and mounts from top of motorboard through a cutout. The two types are shown in the accompanying illustrations.

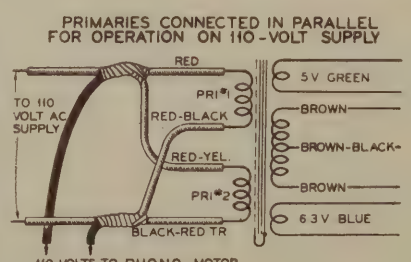
Motor Lubrication.—Apply a few drops of light machine oil to the spindle bearing and oil hole every six months.

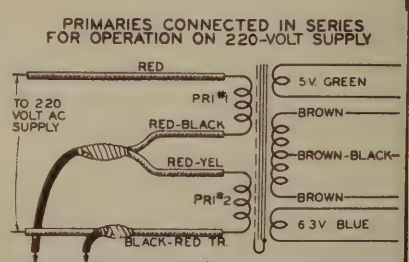
The motor spindle is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

The automatic stop should be adjusted so that the lever will snap to the "off" position when the pickup needle is 1¾ inches from the center line of the spindle.



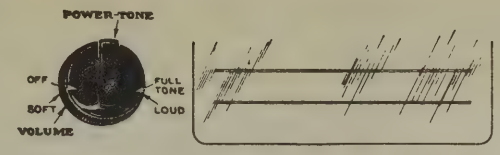




D-C RESISTANCE

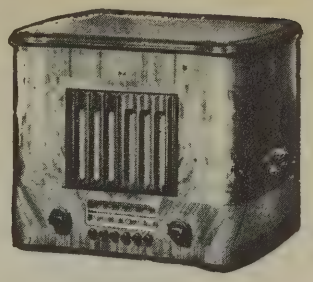
| | |
|---|---|
| PRIMARY *1 | 13Ω |
| PRIMARY *2 | 16Ω |
| H.V. SECONDARY (TOTAL) | 550Ω |

**REFER TO MODEL 95T5 FOR ALIGNMENT PROCEDURE**

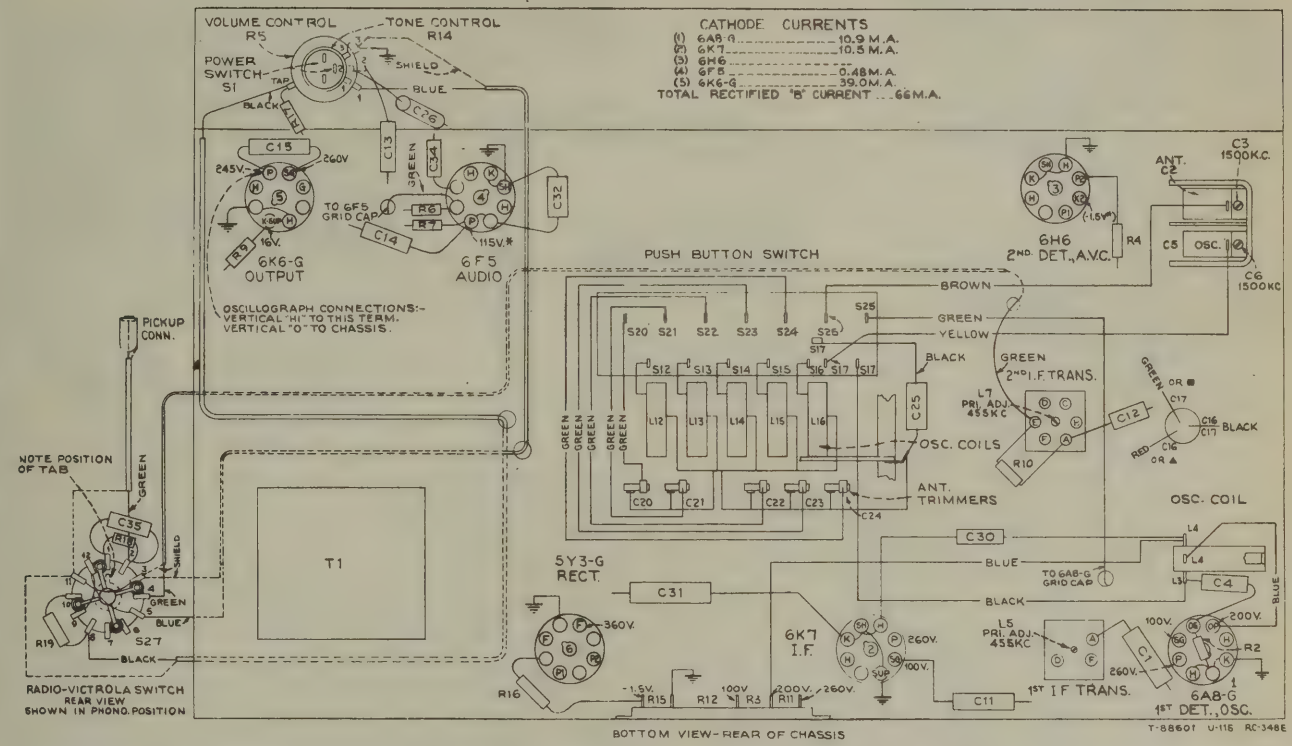



POWER-TONE-VOLUME CONTROL

TUNING CONTROL

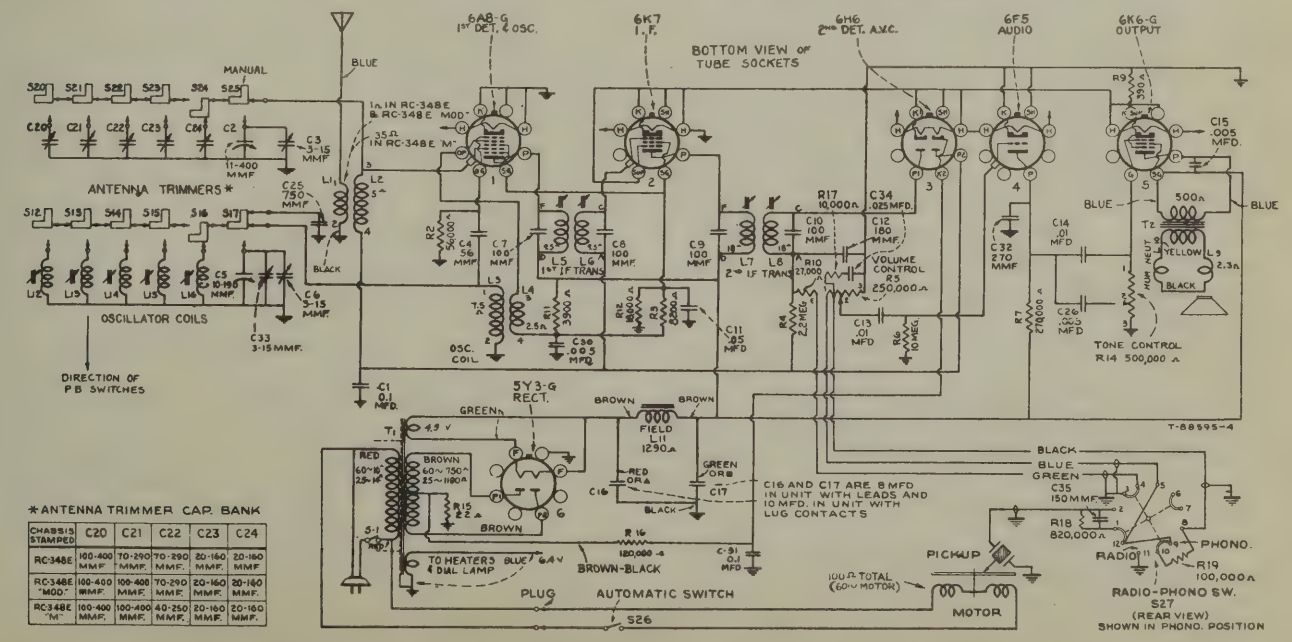


U-115




Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

*NOTE: Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.




*ANTENNA TRIMMER CAP. BANK

| CHASSIS STAMPED | C20 | C21 | C22 | C23 | C24 |
|---|---|---|---|---|---|
| RC-348E | 100-400 MMF. | 70-290 MMF. | 70-290 MMF. | 20-160 MMF. | 20-160 MMF. |
| RC-348E "MOD." | 100-400 MMF. | 100-400 MMF. | 70-290 MMF. | 20-160 MMF. | 20-160 MMF. |
| RC-348E "M" | 100-400 MMF. | 100-400 MMF. | 40-250 MMF. | 20-160 MMF. | 20-160 MMF. |

**Precautionary Lead Dress.**—(1) Dress green lead from antenna coil to switch away from the chassis and gang. (2) Dress lead from 2nd I.F. transformer to volume control away from other leads. (3) Ground bus from 6H6 socket must be close to chassis. (4) Dress leads away from oscillator coil adjustment screws. (5) Dress power transformer primary leads toward left-hand end of chassis. (6) Dress plate lead to output transformer close to chassis.

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-348E)** |
| 32136 | Cable—Shielded cable and female plug for phonograph input |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30904 | Capacitor—100 mmfd. (C7, C8, C9, C10) |
| 12725 | Capacitor—150 mmfd. (C35) |
| 13003 | Capacitor—180 mmfd. (C12) |
| 12488 | Capacitor—270 mmfd. (C32) |
| 31435 | Capacitor—750 mmfd. (C25) |
| 4838 | Capacitor—.005 mfd. (C15, C26, C30) |
| 14393 | Capacitor—.01 mfd. (C13, C14) |
| 4870 | Capacitor—.025 mfd. (C34) |
| 4886 | Capacitor—.05 mfd. (C11) |
| 30899 | Capacitor—0.1 mfd. (C1, C31) |
| 31424 | Capacitor—Comprising 2 sections 8 mfd. each (C16, C17) (This type has leads) |
| 32342 | Capacitor—Comprising 2 sections 10 mfd. each (C16, C17) (This type has terminals) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 32338 | Coil—Antenna coil (L1, L2) |
| 31098 | Coil—Oscillator coil (L3, L4) |
| 31422 | Condenser — 2-gang variable tuning condenser (C2, C3, C5, C6, C33) |
| 32355 | Control — Volume control, tone control and power switch |
| 30377 | Cord—Indicator drive cord |
| 30905 | Core—Adjustable core for i-f transformers |
| 31386 | Core—Adjustable core and stud for oscillator coils |
| 31421 | Drum—Variable condenser drive cord drum |
| 31420 | Indicator—Station selector indicator pointer |
| 11891 | Lamp—Dial lamp |
| 31419 | Plate—Dial color plate |
| 30868 | Plug—2-contact female plug for motor power leads |
| 31373 | Pulley—Indicator drive cord pulley |
| 31425 | Resistor—Voltage divider—comprising one 22-ohm, one 18,000-ohm, one 8,200-ohm and one 3,900-ohm sections (R3, R11, R12, R15) |
| 31388 | Resistor—390 ohms, 1 watt (R9) |
| 14559 | Resistor—10,000 ohms, ½ watt (R17) |
| 12738 | Resistor—27,000 ohms, ½ watt (R10) |
| 12286 | Resistor—56,000 ohms, ½ watt (R2) |
| 3252 | Resistor—100,000 ohms, ½ watt (R19) |
| 13734 | Resistor—120,000 ohms, ½ watt (R16) |
| 12199 | Resistor—270,000 ohms, ½ watt (R7) |
| 30963 | Resistor—820,000 ohms, ½ watt (R18) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R6) |
| 14887 | Retainer—Pulley retainer |
| 14350 | Screw—No. 8-32 square-head set screw for drum, Stock No. 31421 |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Indicator drive cord tension spring |
| 31414 | Switch—Push button station selector switch (S12, S13, S14, S15, S16, S17, S20, S21, S22, S23, S24, S25) |
| 30902 | Transformer—First i-f transformer (L5, L6, C7, C8) |
| 30903 | Transformer—Second i-f transformer (L7, L8, C9, C10) |
| 31574 | Transformer—Power transformer, 100-120 volts, 25-60 cycle (T1) |
| 31380 | Transformer—Power transformer, 100-120 volts, 50-60 cycle (T1) |
| 31575 | Transformer—Power transformer, 100-120 and 200-240 volts, 50-60 cycle (T1) |
| | **MOTOR ASSEMBLIES *** (Motor No. 84430) |
| 32176 | Bearing—Rotor thrust bearing screw and nut |
| 32175 | Field—Motor field coils and laminations |
| 32135 | Motor—105-125 volts, 60 cycle |
| 32177 | Shaft—Turntable spindle shaft and fibre gear |
| | (Motor No. 84484-2, 3, or 4) |
| 32336 | Field—Motor field coils and laminations, 110 volts, 60 cycle (For Motor 84484-2) |
| 32650 | Field—Motor field coils and laminations, 110 volts, 50 cycle (For Motor 84484-3) |
| 32652 | Field—Motor field coils and laminations, 110 volts, 25 cycle (For Motor 84484-4) |
| 32558 | Motor—105-125 volts, 60 cycle (84484-2) |
| 32637 | Motor—105-125 volts, 50 cycle (84484-3) |
| 32638 | Motor—105-125 volts, 25 cycle (84484-4) |
| 32337 | Shaft—Turntable spindle shaft and fibre gear—60 cycle (For Motor 84484-2) |
| 32651 | Shaft—Turntable spindle shaft and fibre gear—50 cycle |
| 32653 | Shaft—Turntable spindle shaft and fibre gear—25 cycle |
| | **PICKUP AND ARM ASSEMBLIES** |
| 31212 | Base—Pickup arm pivot shaft, trip lever, and mounting base assembly |
| 32138 | Cable—Shielded cable and male plug for pick-up arm |
| 31050 | Crystal—Pickup crystal and needle screw |
| 32137 | Pickup and arm complete |
| 12539 | Screw—Pickup needle screw |
| | **SPEAKER ASSEMBLIES** |
| 31443 | Cone—Speaker cone and voice coil (L9)—for Speaker No. 84327-1 |
| 31663 | Speaker complete (No. 84327-1) |
| 31477 | Transformer—Output transformer (T2) (For Speaker No. 84327-1) |
| 32586 | Cone—Speaker cone and voice coil for Speaker No. 84327-3 |
| 32587 | Coil—Speaker field coil for Speaker No. 84327-3 |
| 32588 | Transformer—Output transformer for Speaker No. 84327-3 |
| | **MISCELLANEOUS ASSEMBLIES** |
| 14803 | Brake—Automatic brake complete |
| 31428 | Button—Station selector switch push button |
| 31487 | Clip—Spring clip to hold dial |
| 31464 | Damper—One rubber cap for motor spindle, and one metal damper plate |
| 31429 | Dial—Station selector glass dial |
| 31095 | Disc—10 protective discs for call letter markers |
| 31667 | Escutcheon—Tuning dial escutcheon |
| 32140 | Hinge—Cabinet lid hinge |
| 31355 | Knob—Station selector or radio-record switch knob (small) |
| 31391 | Knob—Tone control and power switch knob (small) |
| 30773 | Knob—Volume control or station selector knob (large) |
| 30991 | Markers—Push button call letter markers |
| 31054 | Mounting—Pickup arm rubber mounting, washers, and nut |
| 32139 | Mounting—Motor mounting spacers, washers, and screw—sufficient for one motor |
| 30870 | Plug—2-contact male plug for motor leads |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 30773 and 31355 |
| 30330 | Spring—Retaining spring for knob, Stock No. 31391 |
| 30100 | Springs—Tension springs for automatic brake—one long and one short |
| 32141 | Support—Cabinet lid support |
| 14804 | Switch—Automatic brake switch (S26) |
| 12647 | Switch—Radio-Record switch (S27) |
| 31463 | Turntable |

* Motor No. 84430 is type that mounts from below motorboard. Motor No. 84484 is type that mounts from top of motorboard through a cutout.

## TRIMMER CAPACITOR BANK AND ELECTRIC-TUNING OSCILLATOR COILS

(Refer to Electrical Specifications for frequency ranges)

| DESCRIPTION | Chassis Stamped RC-348E — Stock No. | Chassis Stamped RC-348E "MOD" — Stock No. | Chassis Stamped RC-348E "M" — Stock No. |
|---|---|---|---|
| Capacitor—Trimmer capacitor bank (C20, 21, 22, 23, and 24) | 31416 | 32066 | 32339 |
| Coil—Oscillator coil (L12) | 31415 | 31415 | 31415 |
| Coil—Oscillator coil (L13) | 31384 | 31415 | 31415 |
| Coil—Oscillator coil (L14) | 31384 | 31384 | 32340 |
| Coil—Oscillator coil (L15) | 31383 | 31383 | 31383 |
| Coil—Oscillator coil (L16) | 31383 | 31383 | 31383 |

# MODELS U-119, U-122E, and U-124

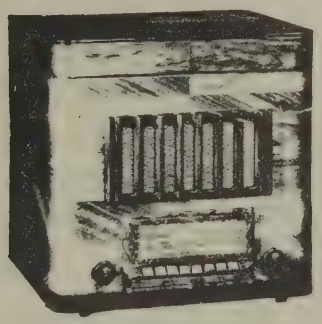
## Six-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Victrolas

*Model U-124*

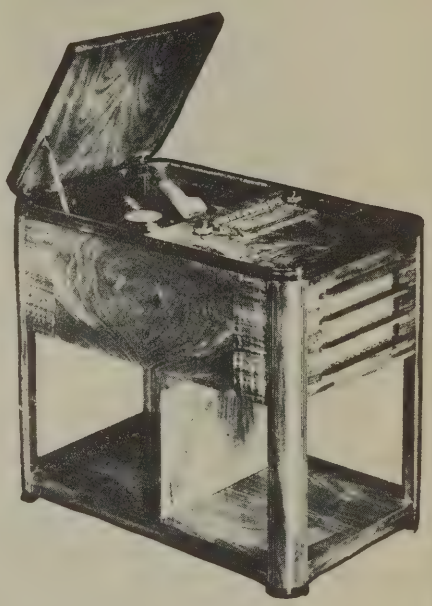
**Model U-119** is a six-tube table model, with six-inch speaker.

**Model U-122E** is a six-tube end-table model, with eight-inch speaker.

**Model U-124** is a six-tube console model, with twelve-inch speaker.



*Model U-119*



*Model U-122E*

## Electrical Specifications

| Frequency Ranges | | R-F Alignment Frequencies | |
|---|---|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc | "Short Wave" (C) | 20 mc (osc., ant.) |
| "Medium Wave" (B) | 2.3-7 mc | "Medium Wave" (B) | 6.1 mc (osc.) |
| "Short Wave" (C) | 7-22 mc | "Standard Broadcast" (A) | 1,500 kc (osc.) |

Six Electric Tuning Positions ..... 550-1,500 kc
2 stations between approximately 550- 950 kc (Buttons 1 and 2)
2 stations between approximately 680-1,180 kc (Buttons 3 and 4)
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)

RCA Tube Complement

| | | | |
|---|---|---|---|
| (1) RCA-6K8 | First-Detector—Oscillator | (4) RCA-6F5 | Audio Voltage Amplifier |
| (2) RCA-6K7 | Intermediate-Frequency Amplifier | (5) RCA-6F6 | Audio Power Amplifier |
| (3) RCA-6H6 | Second-Detector and A.V.C. | (6) RCA-5W4 | Full-Wave Rectifier |

Pilot Lamps (2) ..... Mazda 47, 6.3 volts, .15 amp.

| Power Supply Rating | | Radio Only | Total |
|---|---|---|---|
| A-6 | 105-125 volts, | 60 cycles, 80 watts | 105 watts |
| A | 105-125 volts, | 50-60 cycles, 80 watts | 105 watts |
| B-2 | 105-125 volts, | 25 cycles, 80 watts | 105 watts |
| C-6 | 105-130/140-160/195-250 volts, | 60 cycles, 80 watts | 105 watts |
| C | 105-130/140-160/195-250 volts, | 50-60 cycles, 80 watts | 105 watts |

| Power Output | U-119 | U-122E, U-124 |
|---|---|---|
| Undistorted | 2.0 watts | 2.5 watts |
| Maximum | 4.0 watts | 4.5 watts |

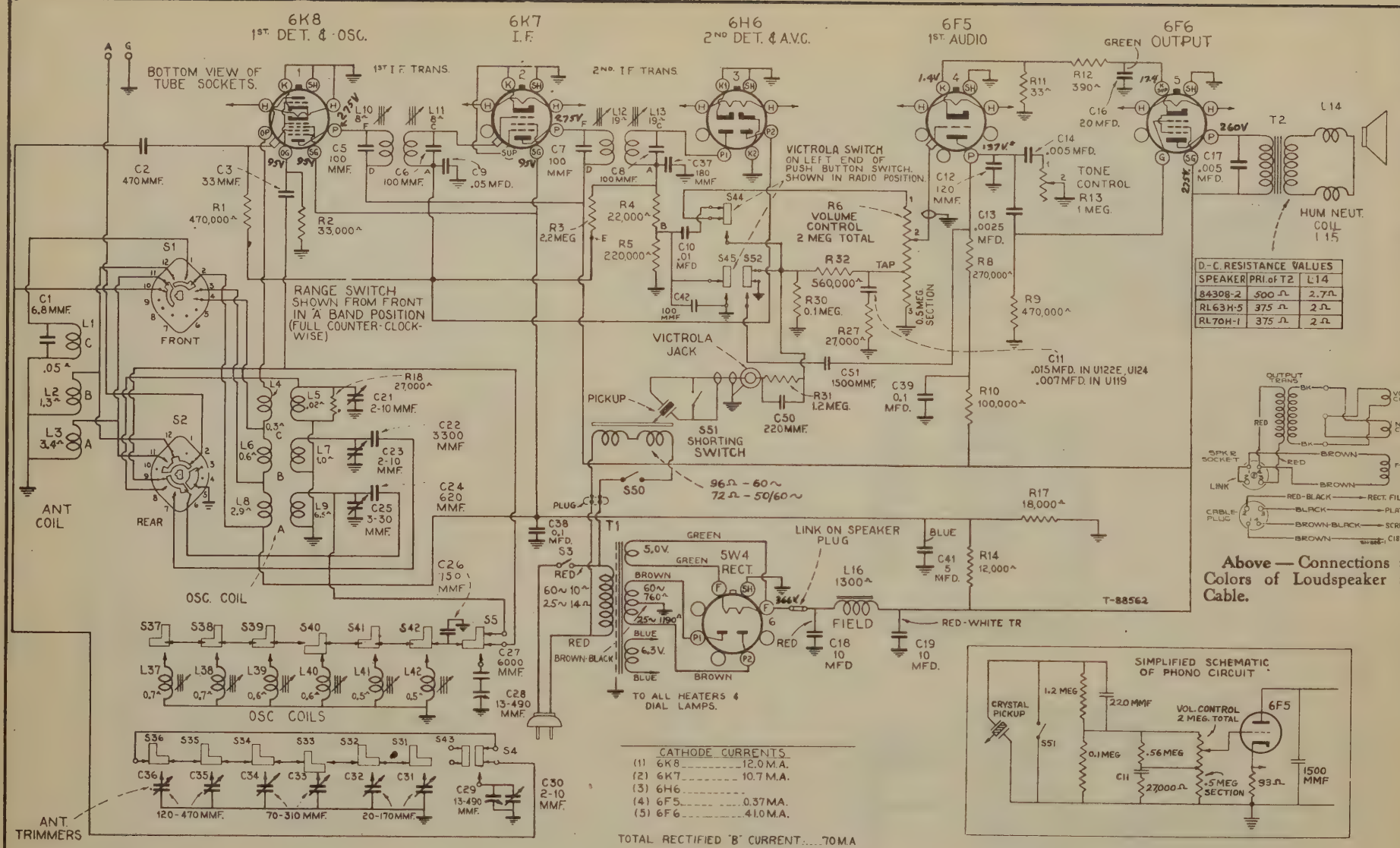
Loudspeaker

Type ..... Electrodynamic

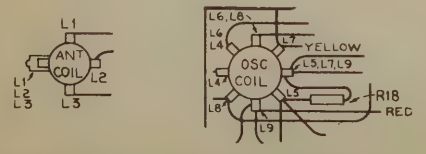
Voice-coil Impedance ..... 84308-2: 3 ohms; RL-63H-5: 2.25 ohms; RL-70H-1: 2.25 ohms ..... at 400 cycles

| Motor | | Pickup | |
|---|---|---|---|
| Type | Self-starting induction | Type | Crystal |
| Turntable Speed | 78 r.p.m. (adjustable) | Impedance | 80,000 ohms at 1,000 cycles |
| Record Diameter | 10-inch or 12-inch | Average Output | 1½ volts at 1,000 cycles across 250,000 ohm load |

**REFER TO MODEL 96K2 FOR ALIGNMENT PROCEDURE AND CHANGES IN CHASSIS MARKED "M" OR "R"**

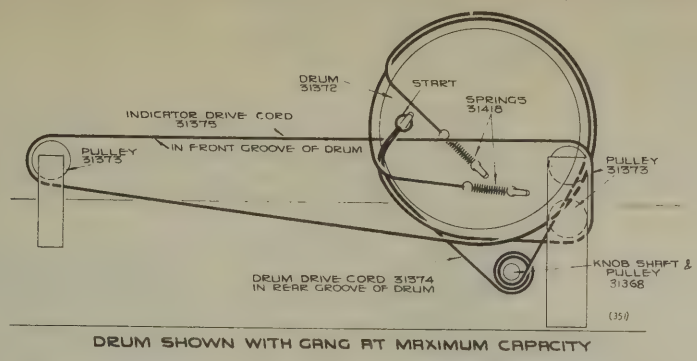



**Above — Connections and Colors of Loudspeaker and Cable.**

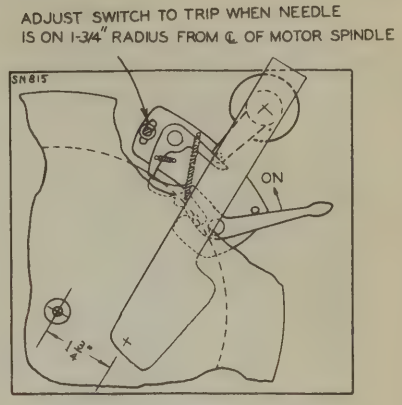



**Precautionary Lead Dress.—**

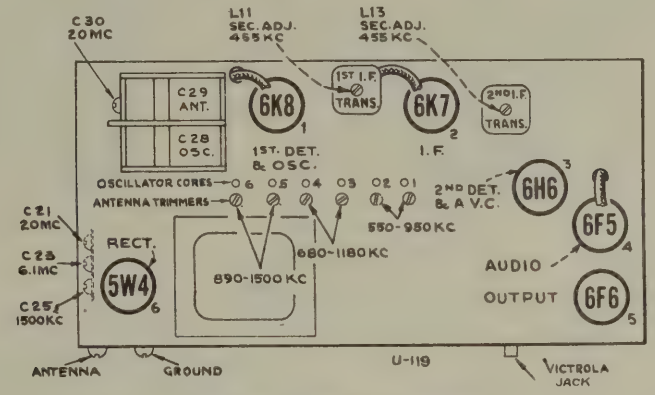
1. Dress power-switch leads against left apron to prevent hum pickup.
2. Dress R1 away from front of chassis.
3. Leads across back of chassis should be dressed under electrolytic to prevent approaching Victrola jack.
4. Dress lead from L5 to range switch away from other leads.
5. Dress leads away from antenna coil.
6. Dress other parts and leads away from R14, as it becomes heated.



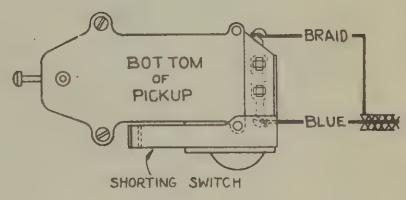

*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*



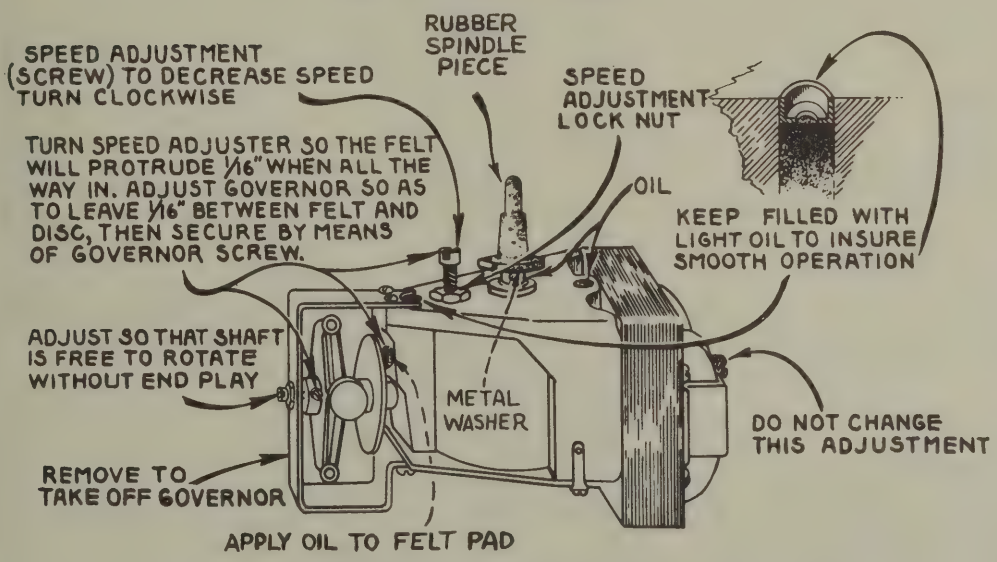

*Adjustment of Automatic Switch*



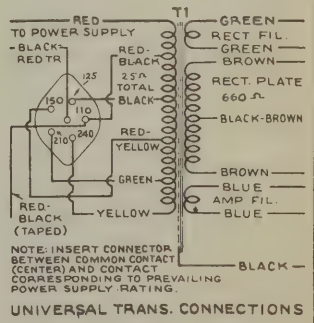

*Tube and Trimmer Locations*




*Pickup Connections*


SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
RUBBER SPINDLE PIECE
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
METAL WASHER
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
APPLY OIL TO FELT PAD

*Motor Lubrication and Adjustments*




UNIVERSAL TRANS. CONNECTIONS

**Above** — Universal Power Transformer Connections. (110-volt supply for the Victrola motor is obtained by connecting the motor to the red and the red-black leads.)

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | **RECEIVER ASSEMBLIES** | | 30433 | Capacitor—470 mmfd. (C2) | |
| 14517 | Board—Antenna ground terminal board | | 31381 | Capacitor—620 mmfd. (C24) | |
| 31400 | Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25) | | 31435 | Capacitor—750 mmfd. (C26) | |
| 14079 | Capacitor—6.8 mmfd. (C1) | | 13762 | Capacitor—1,500 mmfd. (C51) | |
| 31387 | Capacitor—Antenna coil trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36) | | 31403 | Capacitor—3,300 mmfd. (C22) | |
| 12948 | Capacitor—33 mmfd. (C3) | | 31405 | Capacitor—6,000 mmfd. (C27) | |
| 12720 | Capacitor—100 mmfd. (C42) | | 5107 | Capacitor—.0025 mfd. (C13) | |
| 30904 | Capacitor—100 mmfd. (C5, C6, C7, C8) | | 4838 | Capacitor—.005 mfd. (C14, C17) | |
| 12724 | Capacitor—120 mmfd. (C12) | | 5148 | Capacitor—.007 mfd. (C11) (Model U-119 only) | |
| 13003 | Capacitor—180 mmfd. (C37) | | 14393 | Capacitor—.01 mfd. (C10) | |
| 12694 | Capacitor—220 mmfd. (C50) | | 11315 | Capacitor—.015 mfd. (C11) (Models U-122E and U-124 only) | |
| | | | 4886 | Capacitor—.05 mfd. (C9) | |
| | | | 4839 | Capacitor—0.1 mfd. (C38, C39) | |
| | | | 31371 | Capacitor—Comprising two 10 mfd., one 20 mfd., and one 5 mfd. sections (C16, C18, C19, C41) | |
| | | | 31382 | Clip—Oscillator coil and core mounting clip | |

# REPLACEMENT PARTS (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31402 | Coil—Antenna coil—A, B, and C bands (L1, L2, L3) |
| 31401 | Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9) |
| 31383 | Coil—Oscillator coil—A band (L41, L42) |
| 31384 | Coil—Oscillator coil—A band (L39, L40) |
| 31385 | Coil—Oscillator coil—A band (L37, L38) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 31375 | Cord—Indicator pointer drive cord |
| 31374 | Cord—Variable condenser drum drive cord |
| 30905 | Core—Adjustable core for i-f transformer |
| 31386 | Core—Adjustable core and stud for oscillator coil Stock Nos. 31383, 31384, and 31385 |
| 31372 | Drum—Variable condenser drive cord drum and calibrator dial |
| 11891 | Lamp—Dial lamp |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31373 | Pulley—Drive cord pulley |
| 14671 | Resistor—33 ohms, ½ watt (R11) |
| 31388 | Resistor—390 ohms, 1 watt (R12) |
| 31389 | Resistor—12,000 ohms, wire wound, 5 watts (R14) |
| 30151 | Resistor—18,000 ohms, 1 watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R7, R18) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 14560 | Resistor—100,000 ohms, ½ watt (R10, R30) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R1, R9) |
| 12486 | Resistor—560,000 ohms, ½ watt (R32) |
| 30208 | Resistor—1.2 meg., ½ watt (R31) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Retaining spring for station selector knob shaft |
| 14887 | Retainer—Drive cord pulley retainer |
| 4669 | Screw—No. 8-32 square head set screw for drum Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 31418 | Spring—Indicator, or drum drive cord tension spring |
| 31364 | Socket—Dial lamp socket |
| 14278 | Socket—Pickup input socket |
| 31251 | Socket—Tube socket |
| 31398 | Switch—Range switch (S1, S2) |
| 31370 | Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S44, S45, S52) |
| 30957 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 30903 | Transformer—Second i-f transformer (L12, L13, C7, C8) |
| 31445 | Transformer—Power transformer 100-120 volts, 25-60 cycle (T1) |
| 31380 | Transformer—Power transformer 100-120 volts, 50-60 cycle (T1) |
| 31446 | Transformer—Power transformer 100-130/140-160/195-250 volts, 50-60 cycle (T1) |

## MOTOR ASSEMBLIES

| | |
|---|---|
| 31617 | Bracket—Motor governor end bearing bracket—less bearing screw, and nut |
| 31618 | Field—Motor field coils and laminations—105-125 volts, 60 cycle |
| 31619 | Field—Motor field coils and laminations—105-125 volts, 50-60 cycle |
| 31626 | Field—Motor field coils and laminations—105-125 volts, 25 cycle |
| 31623 | Governor—Motor governor complete—60 cycle |
| 11703 | Governor—Motor governor complete—50-60 cycle |
| 31624 | Governor—Motor governor complete—25 cycle |
| 31724 | Motor—105-125 volts, 25 cycle (M1) |
| 31462 | Motor—105-125 volts, 50-60 cycle (M1) |
| 31461 | Motor—105-125 volts, 60 cycle (M1) |
| 31616 | Screw—Motor rotor bearing screw and nut |
| 31620 | Screw—Motor speed regulator screw and nut |
| 31621 | Shaft—Motor turntable spindle shaft and gear—60 cycle or 50-60 cycle |
| 31773 | Shaft—Motor turntable spindle shaft and gear—25 cycle |
| 31622 | Washer—Motor spindle shaft thrust bearing washers (1 metal, 1 felt) |

## MOTOR BOARD ASSEMBLIES

| | |
|---|---|
| 9848 | Cup—Used needle cup and lid complete |
| 31464 | Damper—One rubber spindle cap and one metal damper plate |
| 31465 | Mounting—Pickup arm base mounting—one rubber washer, one lockwasher, one nut |
| 30870 | Plug—2-contact male plug for motor and switch leads |
| 31158 | Screw—Motor mounting screws, washers, and spacers, (sufficient for one motor) |
| 31155 | Spring—Used needle cup lid spring |
| 30100 | Spring—Auto. switch springs—one long spring and one short spring |
| 31466 | Switch—Automatic motor switch and switch lever |
| 31467 | Switch—Switch only—for auto. switch (S50) |
| 31463 | Turntable |

## PICKUP AND ARM ASSEMBLIES

| | |
|---|---|
| 31156 | Crystal—Pickup crystal cartridge and needle screw and shorting switch (S51) |
| 31468 | Pickup and Arm complete |
| 31160 | Screw—Needle screw |
| 31469 | Shaft—Pickup pivot arm and shaft assembly complete with base |

## SPEAKER ASSEMBLIES
### Model U-119 (Speaker No. 84308-2)

| | |
|---|---|
| 31762 | Cone—Speaker cone and voice coil (L14) |
| 31761 | Speaker Complete |
| 31444 | Transformer—Output transformer (T2) |

## SPEAKER ASSEMBLIES
### Model U-122E (Speaker No. RL63H-5)

| | |
|---|---|
| 14356 | Board—3-contact speaker terminal board |
| 13866 | Cap—Cone center dust cap |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L15) |
| 31310 | Cone—Speaker cone and voice coil (L14) |
| 31302 | Plug—4-contact male plug for speaker |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31453 | Speaker Complete |
| 14355 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |

## SPEAKER ASSEMBLIES
### Model U-124 (Speaker No. RL70H-1)

| | |
|---|---|
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31302 | Plug—4-contact male plug |
| 31592 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 14355 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |

## MISCELLANEOUS ASSEMBLIES

| | |
|---|---|
| 31397 | Button—Station selector push-button |
| 31456 | Cover—8 protective covers for push-button markers |
| 31591 | Dial—Station selector dial scale—Model U-124 only |
| 31406 | Dial—Station selector dial scale—Models U-119 and U-122E only |
| 31395 | Escutcheon—Tuning dial escutcheon only less push-buttons and dial scale |
| 13085 | Hinge—Cabinet lid hinge—Model U-119 only |
| 30698 | Hinge—Cabinet lid hinge—Model U-124 only |
| 31103 | Hinge—Cabinet lid hinge—Model U-122E only |
| 31392 | Indicator—Indicator pointer, carriage, and clip |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31458 | Marker—"Dial Tuning" marker for push-button—Models U-119 and U-122E only |
| 31460 | Marker—"Dial Tuning" marker for push-button—Model U-124 only |
| 31457 | Marker—"Record Player" marker for push-button—Models U-119 and U-122E only |
| 31459 | Marker—"Record Player" marker for push-button—Model U-124 only |
| 31589 | Marker—Station call letter markers—Models U-119 and U-122E |
| 31590 | Marker—Station call letter markers—Model U-124 |
| 31393 | Screen—Dial color screen |
| 11210 | Screw—Chassis mounting screws, washers, and lockwashers—Model U-124 only |
| 31390 | Screw—Chassis mounting screws, washers, and lockwashers—Model U-119 only |
| 31471 | Screw—Chassis mounting screws, washers, and lockwashers—Model U-122E only |
| 31470 | Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 reqd.) |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |
| 14270 | Spring—Retaining spring for knob Stock Nos. 30773 and 31355 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |
| 31164 | Support—Cabinet lid support—Model U-119 only |
| 30946 | Support—Cabinet lid support—Model U-122E only |
| 11831 | Support—Cabinet lid support—Model U-124 only |

# MODELS U-121, U-123, and U-127E

## CHASSIS No. RC-348J RC-348H (Single-Band) RC-348L RC-421 (Two-Band)

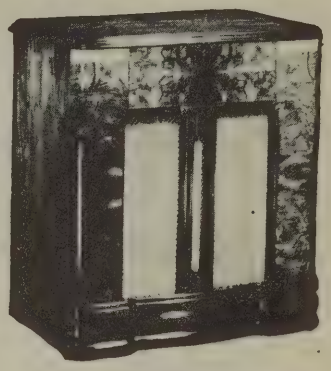
## Six-Tube, Electric-Tuning, A-C, Victrolas

Models U-121 and U-127E have a non-automatic Victrola mechanism, with crystal pickup, automatic stop, and self-starting constant-speed motor.

Model U-123 has an automatic Victrola mechanism which permits playing seven 12-inch or eight 10-inch records in succession. It has a crystal pickup and constant-speed self-starting motor.

*Model U-121 (Manual)*

*Model U-127E (Manual)*



*Model U-123 (Automatic)*

## Electrical and Mechanical Specifications

**Frequency Range**..... 540-1,720 kc
RC-421 also has a short-wave band of..... 5.8-18.0 mc

PUSH BUTTON RANGES (RC-348J, 348H, and 348L)
Two stations between approximately 550- 980 kc
One station between approximately 690-1,225 kc
Two stations between approximately 850-1,500 kc

PUSH BUTTON RANGES (RC-421)
One station between approximately 550- 980 kc
One station between approximately 590-1,020 kc
One station between approximately 690-1,225 kc
Two stations between approximately 890-1,500 kc

TUBE COMPLEMENT
(1) RCA-6A8-G (6SA7 in RC-421)..... First-Detector, Oscillator
(2) RCA-6K7..... Intermediate-Frequency Amp.
(3) RCA-6H6..... Second-Detector, A.V.C.
(4) RCA-6F5 (6SF5 in RC-421)..... Audio Voltage Amplifier
(5) RCA-6K6-G (6F6-G in RC-421)..... Power Output
(6) RCA-5Y3-G..... Full-Wave Rectifier

POWER OUTPUT (RC-348J, 348H, and 348L)
Undistorted..... 2 watts, Maximum..... 4 watts

POWER OUTPUT (RC-421)
Undistorted..... 2.5 watts, Maximum..... 4.5 watts

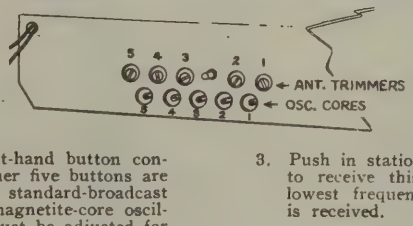
POWER SUPPLY RATINGS
A-6..... 105-125 volts, 60 cycles, 100 watts total
A-5..... 105-125 volts, 50 cycles, 100 watts total
B-2..... 105-125 volts, 25 cycles, 100 watts total
C-6..... 105-125/210-250 volts, 60 cycles, 100 watts total
C-5..... 105-125/210-250 volts, 50 cycles, 100 watts total

| | U-121 | U-123 (RC-348H) | U-123 (RC-421) | U-127E |
|---|---|---|---|---|
| Loudspeaker (electrodynamic) | RL-70F-3 | RL-70F-3 | RL-70H-6 | RL-63H-5 |
| Diameter | 12-inch | 12-inch | 12-inch | 8-inch |
| Voice-Coil Impedance at 400 cycles | 2.2 ohms | 2.2 ohms | 2.2 ohms | 2.2 ohms |

## Adjustments for Electric Tuning

**Push-Button Ranges in RC-348J, 348H, and 348L (Single-Band Receivers)**

No. 1 and 2...Approximately 550- 980 kc
No. 3.....Approximately 690-1,225 kc
No. 4 and 5...Approximately 850-1,500 kc




**Push-Button Ranges in RC-421 (Two-Band Model U-123)**

No. 1.....Approximately 550- 980 kc
No. 2.....Approximately 590-1,020 kc
No. 3.....Approximately 690-1,225 kc
Nos. 4, 5.....Approximately 890-1,500 kc

These models have six push buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning button, and manually tune in the first station on the list.
3. Push in station-button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

**(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)**

6. Make a final careful adjustment of the oscillator cores using one or two feet of wire as an antenna.

**The phonograph motor** is a self-starting constant-speed induction type.

**Motor Lubrication (Models U-121 and U-127E).**—Apply a few drops of light machine oil to the spindle bearing and oil hole every six months. The oil hole is located in the motor casting, adjacent to the spindle bearing, and has a screw plug.

**The automatic stop (Models U-121 and U-127E)** should be adjusted so that the lever will snap to the "off" position when the pickup needle is 1¾ inches from the center line of the spindle.

REFER TO INDEX FOR DATA ON AUTOMATIC RECORD CHANGER

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Marks.**—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

### RC-348J, RC-348H, and RC-348L

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point between 550-750 kc | L7 and L8 (2nd I-F Trans.) |
| 2 | 6A8-G grid cap, in series with .01 mfd. | 455 kc | | L5 and L6 (1st I-F Trans.) |
| 3 | Antenna lead (blue) in series with 200 mmf. | 1,500 kc | 1,500 kc calibration mark | C6 (osc.)* C3 (ant.) |
| 4 | Follow "Adjustments for Electric Tuning." | | | |

* The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.

**Drum and Dial Indicator Adjustment.**—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down (RC-348 series) and up for RC-421. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

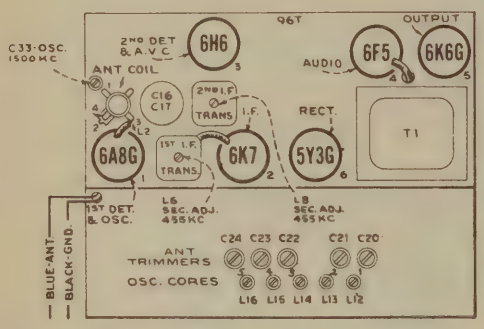
**After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, move the pointer the required distance along the cord.**

For additional details, refer to booklet, "RCA Victor Receiver Alignment."

### RC-421 (Two-band Model U-123)

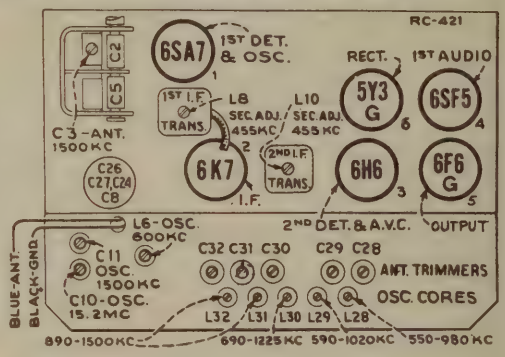
| Steps | Connect the high side of test.-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | Quiet point between 550-750 kc | L9 and L10 (2nd I-F trans.) |
| 2 | Stator of ant. section of gang | 455 kc | | L7 and L8 (1st I-F trans.) |
| 3 | Antenna lead, in series with 200 mmf. | 600 kc | 600 kc calibration mark | L6 (osc.) |
| 4 | | 1,500 kc | 1,500 kc calibration mark | C11 (osc.) C3 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna lead, in series with 400 ohms | 15.2 mc | 15.2 mc calibration mark | C10 (osc.)* |
| 7 | Follow "Adjustments for Electric Tuning." | | | |

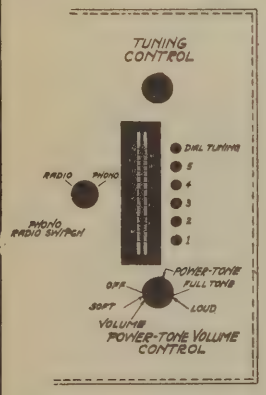
* Rock gang for maximum output while adjusting C10.
Note.—The oscillator tracks above the signal on both bands.



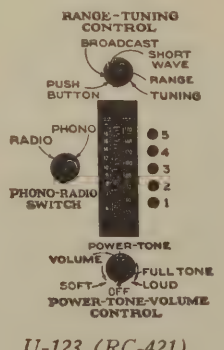

*At left—Tube and trimmer location for single-band chassis, RC-348J, RC-348H, and RC-348L.*

*At right—Tube and trimmer location for double-band chassis RC-421.*

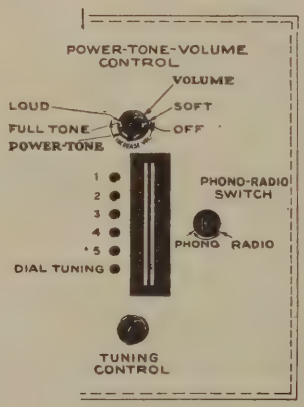


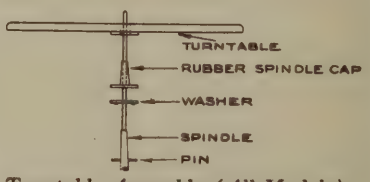

*Model U-121 U-123 (RC-348H).*



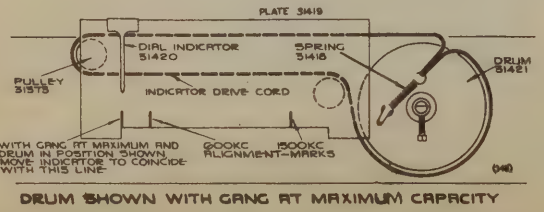

*U-123 (RC-421).*




*Model U-127E*



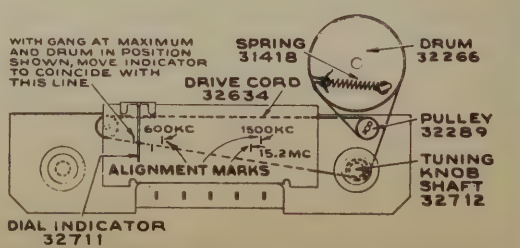

*Turntable Assembly (All Models)*



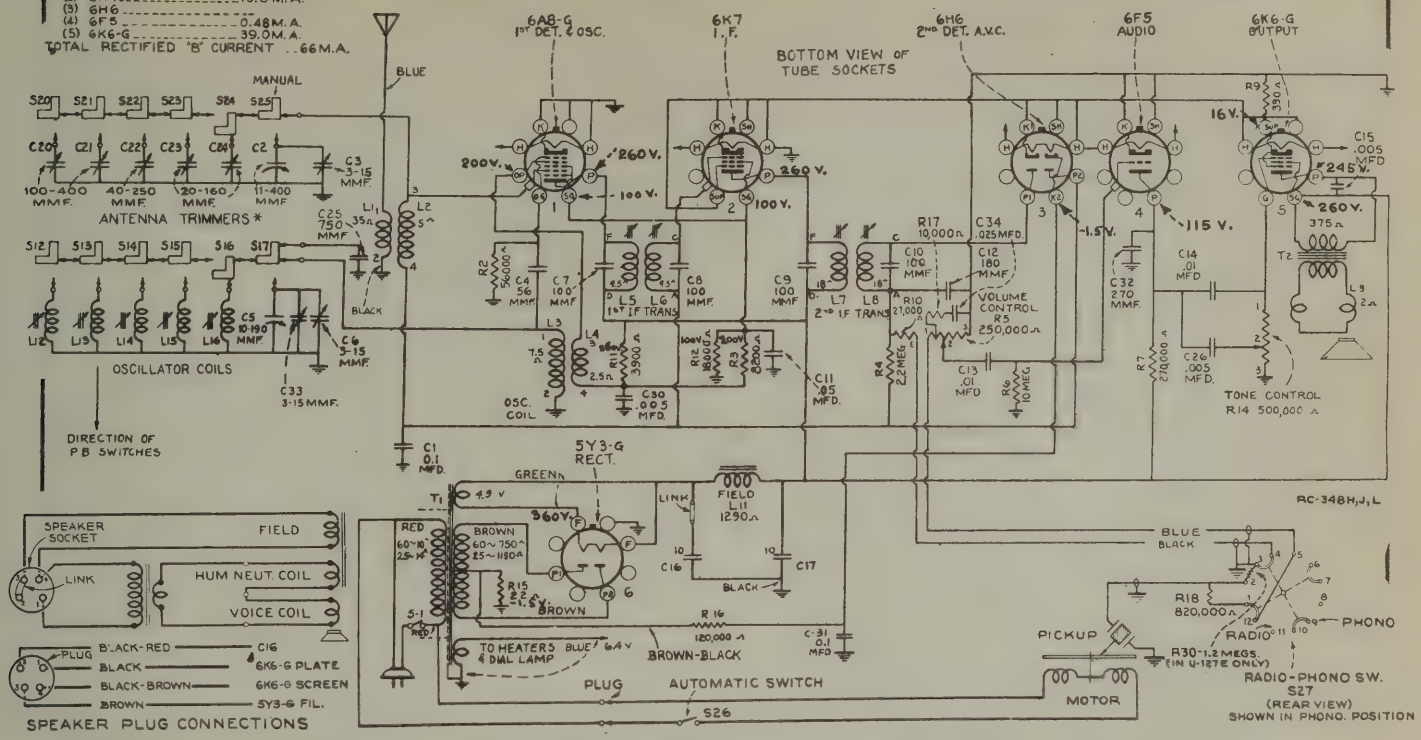

*Dial Mechanism*

RC-348J, 348H, and 348L

RC-421

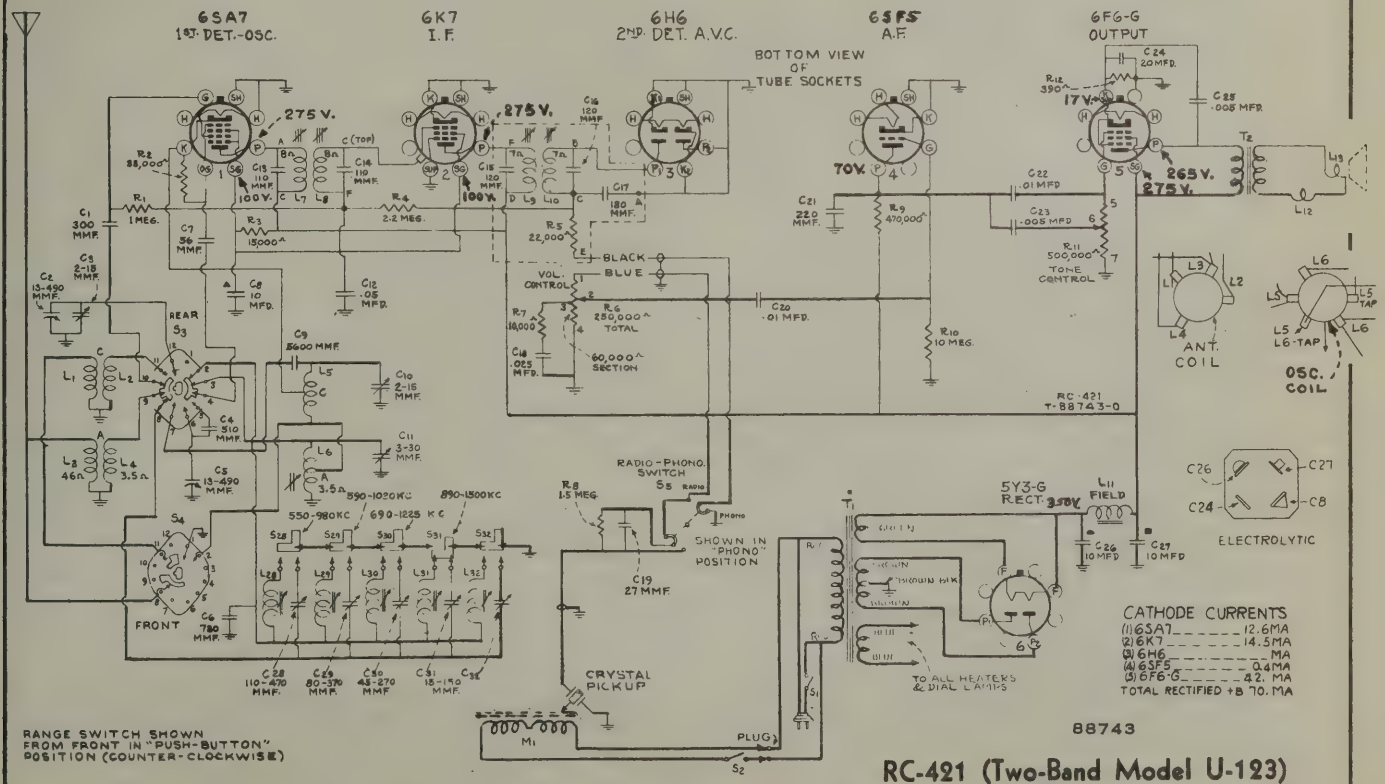


# U-121, U-123, U-127E




## U-121, U-123 (Single-Band), and U-127E

**Precautionary Lead Dress.**—(1) Dress green lead from antenna coil to switch away from the chassis and gang. (2) Ground bus from 6H6 socket must be close to chassis. (3) Dress leads away from oscillator coil adjustment screws. (4) Dress power transformer primary leads toward left-hand end of chassis. (5) Dres plate lead from output tube close to chassis.




## RC-421 (Two-Band Model U-123)

Note the following additional d-c resistances: Voice-coil, 2 ohms; primary of output transformer 375 ohms; 60-cycle power transformer, primary 9 ohms, secondary 735 ohms.

**Precautionary Lead Dress.**—Dress the oscillator grid condenser (C7) away from chassis. Leads along back of chassis must be dressed in corner of chassis and away from contact "E" of 2nd i-f transformer. Keep a-c leads against end of chassis. Dial drum must be 5/32-inch from front apron.

# Replacement Parts Models U-121, U-123 (Single-Band), and U-127E

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** (U121-RC348J) (U123-RC348H, Single-Band) (U127E-RC348L) |
| 32339 | Capacitor—Capacitor bank for push button switch assembly (C20, C21, C22, C23, C24) |
| 12723 | Capacitor—56 mmfd. (C4) |
| 30904 | Capacitor—100 mmfd. (C7, C8, C9, C10) |
| 13003 | Capacitor—180 mmfd. (C12) |
| 12488 | Capacitor—270 mmfd. (C32) |
| 31435 | Capacitor—750 mmfd. (C25) |
| 4838 | Capacitor—.005 mfd., 1,000 volts (C15, C26, C30) |
| 14393 | Capacitor—.01 mfd. (C13, C14) |
| 4870 | Capacitor—.025 mfd., 400 volts (C34) |
| 30882 | Capacitor—.05 mfd., 200 volts (C11) |
| 30899 | Capacitor—0.1 mfd., 200 volts (C1, C31) |
| 32342 | Capacitor—10-10 mfd. electrolytic capacitor (C16, C17) |
| 31382 | Clip—Coil and core clip for push button oscillator coils |
| 32338 | Coil—Antenna coil (L1, L2) |
| 31098 | Coil—Oscillator coil (L3, L4) |
| 31415 | Coil—Push button oscillator coil, 550 to 980 KC. (L12, L13) |
| 32340 | Coil—Push button oscillator coil, 690 to 1,225 KC. (L14) |
| 31383 | Coil—Push button oscillator coil, 850 to 1,500 KC. (L15, L16) |
| 31422 | Condenser—2-gang variable tuning condenser (C2, C3, C5, C6, C33) |
| 32355 | Control—Volume and tone control and power switch (R5, R14, S1) |
| 32634 | Cord—Drive cord |
| 31386 | Core—Core and stud assembly for push button oscillator coils |
| 31421 | Drum—Tuning drive drum and hub |
| 11891 | Lamp—Dial lamp |
| 32136 | Lead—Phonograph input shielded lead and connector (U-121 and U-123) |
| 32908 | Lead—Phonograph input shielded lead and socket (U-127E only) |
| 31419 | Plate—Dial color plate |
| 30868 | Plug—2-contact female for motor leads |
| 31420 | Pointer—Dial indicator pointer |
| 31373 | Pulley—Tuning indicator drive pulley |
| 31388 | Resistor—390 ohms, 1 watt (R9) |
| 14559 | Resistor—10,000 ohms, ½ watt (R17) |
| 12738 | Resistor—27,000 ohms, ½ watt (R10) |
| 12286 | Resistor—56,000 ohms, ½ watt (R2) |
| 13734 | Resistor—120,000 ohms, ½ watt (R16) |
| 12199 | Resistor—270,000 ohms, ½ watt (R7) |
| 30963 | Resistor—820,000 ohms, ½ watt (R18) |
| 30208 | Resistor—1.2 meg., ½ watt (R30) (U127E only) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R6) |
| 31425 | Resistor—Voltage divider resistor tapped at 22 ohms, 18,000 ohms, 8,200 ohms, and 3,900 ohms (R15, R12, R3, R11) |
| 14887 | Retainer—Indicator drive pulley retainer |
| 31482 | Screw—No. 8 square head set screw for drive drum |
| 5040 | Socket—4-contact socket for speaker cable |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Octal base tube socket |
| 31418 | Spring—Drive cord tension spring |
| 31414 | Switch—Selector switch for push button switch assembly (S20, S21, S22, S23, S24, S25, S12, S13, S14, S15, S16, S17) |
| 30902 | Transformer—First i.f. transformer (L5, L6, C7, C8) |
| 30903 | Transformer—Second i.f. transformer (L7, L8, C9, C10) |
| 31445 | Transformer—Power transformer, 110 volts, 25-60 cycle (T1) |
| 31380 | Transformer—Power transformer, 110 volts, 50-60 cycle (T1) |
| 31575 | Transformer—Power transformer, 110-220 volts, 50-60 cycle (T1) |
| | **PICKUP AND ARM ASSEMBLIES** Model U-121 and U-127E |
| 31212 | Base—Pickup arm pivot shaft, trip lever, and mounting base assembly |
| 32138 | Cable—Shielded cable and male plug for pickup arm |
| 31050 | Crystal—Pickup crystal and needle screw |
| 32137 | Pickup and arm complete |
| 12539 | Screw—Pickup needle screw |
| | **MOTORBOARD ASSEMBLIES** Model U-121 and U-127E |
| 14803 | Brake—Automatic brake and switch |
| 31464 | Damper—Comprising one rubber spindle sleeve, and one metal damper plate |
| 30870 | Plug—2-contact male for motor leads |
| 32610 | Rest—Rubber rest for pickup arm |
| 30100 | Springs—One set of springs for automatic brake |
| 32743 | Switch—Radio-Record switch (S27) |
| 14804 | Switch—Switch only for automatic brake (S26) |
| 31463 | Turntable—Record turntable |
| 11865 | Cup—Used needle cup |
| | **MOTOR ASSEMBLIES** Model U-121 and U-127E |
| 31464 | Damper—Comprising 1 rubber spindle sleeve and 1 metal damper plate |
| 32652 | Field—Motor coils and laminations, 105-120 volts, 25-cycle |
| 32650 | Field—Motor coils and laminations, 105-120 volts, 50-cycle |
| 32336 | Field—Motor coils and laminations, 105-120 volts, 60-cycle |
| 32638 | Motor—105-120 volts, 25-cycle |
| 32637 | Motor—105-120 volts, 50-cycle |
| 32558 | Motor—105-120 volts, 60-cycle |
| 30870 | Plug—2-contact male for motor leads |
| 32653 | Shaft—Turntable shaft and gear for 25-cycle motor |
| 32651 | Shaft—Turntable shaft and gear for 50-cycle motor |
| 32337 | Shaft—Turntable shaft and gear for 60-cycle motor |
| | **SPEAKER ASSEMBLIES (RL-70F3)** Models U-121 and U-123 (Single-Band) |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Hum neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31302 | Plug—4-contact male plug |
| 31300 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31301 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **SPEAKER ASSEMBLIES (RL-63H5)** Model U-127E |
| 14356 | Board—3-contact speaker terminal board |
| 13866 | Cap—Cone center dust cap |
| 12012 | Coil—Field coil |
| 11469 | Coil—Hum neutralizing coil |
| 31310 | Cone—Speaker cone and voice coil |
| 31302 | Plug—4-contact male plug for speaker |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31453 | Speaker complete |
| 14355 | Transformer—Output transformer |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 32798 | Button—Push button |
| 13103 | Cap—Pilot lamp cap (bullseye) (For Model U-123 only) |
| 31487 | Clip—Spring clip to mount dial scale |
| 31095 | Cover—One set protective discs for call letter markers |
| 32742 | Dial—Glass dial scale (For Models U-121 and U-123) |
| 31429 | Dial—Glass dial scale (For Model U-127E only) |
| 31667 | Escutcheon—Dial scale escutcheon |
| 32799 | Escutcheon—Push button escutcheon |
| 30698 | Hinge—Cabinet lid hinge (For Models U-121 and U-123) |
| 31103 | Hinge—Cabinet lid hinge (For Model U-127E only) |
| 32562 | Holder—Needle card holder (For Model U-121 only) |
| 31391 | Knob—Tone control knob |
| 31355 | Knob—Dummy or radio-record switch knob |
| 30773 | Knob—Volume control or tuning knob |
| 30991 | Marker—One set station call letter markers |
| 31054 | Mounting—Pickup arm rubber mounting, washers, and nuts (For Model U-121 and U-127E only) |
| 32870 | Screen—Phonograph compartment lamp screen (For Model U-123 only) |
| 31470 | Spring—Motorboard mounting springs, bolts, and washers (For Model U-123 only) (4 required) |
| 32721 | Spring—Retaining spring for push button |
| 30330 | Spring—Retaining spring for tone control knob |
| 14270 | Spring—Retaining spring for tuning, volume control, or switch knob |
| 11831 | Support—Cabinet lid support (For Model U-121 only) |
| 31478 | Support—Cabinet lid support (For Model U-123 only) |
| 30946 | Support—Cabinet lid support (For Model U-127E only) |
| 32743 | Switch—Radio-Record switch (For Model U-123 only) |

# Replacement Parts Model U-123 (Two-Band)

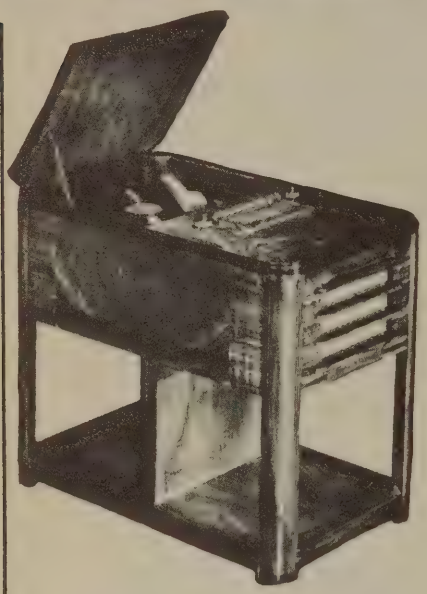
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-421) Model U-123 (Two Band)** |
| 32136 | Cable—Phono. input cable and socket |
| 31379 | Capacitor—Dual trimmer—comprising one 3-30 mmfd. and one 2-10 mmfd. sections (C10, C11) |
| 13605 | Capacitor—27 mmfd. (C19) |
| 12723 | Capacitor—56 mmfd. (C7) |
| 14262 | Capacitor—109 mmfd. (C13, C14) |
| 12404 | Capacitor—120 mmfd. (C15, C16) |
| 14712 | Capacitor—180 mmfd. (C17) |
| 30232 | Capacitor—220 mmfd. (C21) |
| 12952 | Capacitor—300 mmfd. (C1) |
| 30608 | Capacitor—510 mmfd. (C4) |
| 32714 | Capacitor—730 mmfd. (C6) |
| 13895 | Capacitor—5,600 mmfd. (C9) |
| 4838 | Capacitor—.005 mfd. (C23, C25) |
| 4937 | Capacitor—.01 mfd. (C20, C22) |
| 4870 | Capacitor—.025 mfd. (C18) |
| 32787 | Capacitor—.05 mfd. (C12) |
| 33014 | Capacitor—Electrolytic — comprising three 10 mfd. and one 20 mfd. sections (C8, C24, C26, C27) |
| 32705 | Capacitor—Push button trimmer capacitor bank (C28, C29, C30, C31, C32) |
| 31382 | Clip—Push button coil mounting clip |
| 32706 | Coil—Antenna coil (L1, L2, L3, L4) |
| 32707 | Coil—Oscillator coil (L5, L6) |
| 31385 | Coil—Push button oscillator coil — less core, 550-950 kc (L28) |
| 32704 | Coil—Push button oscillator coil — less core, 590-1,020 kc (L29) |
| 32340 | Coil—Push button oscillator coil — less core, 690-1,225 kc (L30) |
| 31383 | Coil—Push button oscillator coil — less core, 890-1,500 kc (L31, L32) |
| 32249 | Condenser—2-gang variable (C2, C3, C5) |
| 32355 | Control—Volume control, tone control, and power switch (R6, R11, S1) |
| 32634 | Cord—Drive cord |
| 31386 | Core—Core and stud for coil, Stock Nos. 31383, 31385, and 32704 |
| 30846 | Core—Core and stud for coil, Stock No. 32340. |
| 32713 | Core—Core and stud for oscillator coil, Stock No. 32707 |
| 32266 | Drum—Condenser drive cord drum |
| 32711 | Indicator—Dial indicator pointer |
| 31480 | Lamp—Dial lamp socket |
| 32710 | Plate—Dial color plate and pointer track |
| 5119 | Plug—3-contact female for speaker cable |
| 30868 | Plug—Motor cable plug |
| 32289 | Pulley—Indicator drive cord pulley |
| 12261 | Resistor—390 ohms, 1 watt (R12) |
| 14559 | Resistor—10,000 ohms, ½ watt (R7) |
| 33489 | Resistor—15,000 ohms, 2.5 watt (R3) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R5) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2) |
| 12285 | Resistor—470,000 ohms, ½ watt (R9) |
| 13730 | Resistor—1 meg., ½ watt (R1) |
| 12201 | Resistor—1.5 meg., ½ watt (R8) |
| 12679 | Resistor—2.2 meg., ½ watt (R4) |
| 13601 | Resistor—10 meg., ½ watt (R10) |
| 30340 | Retainer—Pulley retaining clip |
| 14343 | Retainer—Tuning knob shaft retaining ring |
| 4669 | Screw—No. 8-32 x ⅜ square head set screw for drum |
| 32712 | Shaft—Tuning knob shaft and pulley |
| 31319 | Socket—Octal base tube socket |
| 31418 | Spring—Drive cord tension spring |
| 32703 | Switch—Push button switch (S28, S29, S30, S31, S32) |
| 33113 | Switch—Radio record switch (S5) |
| 32702 | Switch—Range switch (S3, S4) |
| 14376 | Transformer—First i.f. transformer (L7, L8, C13, C14) |
| 14308 | Transformer—Second i.f. transformer (L9, L10, C15, C16, C17, R5) |
| 33112 | Transformer—Power transformer—105-125 volts, 50-60 cycle (T1) |
| 33619 | Transformer—Power transformer, 25 cycles, 105-125 volts |
| | **SPEAKER ASSEMBLIES (RL-70H6) Model U-123 (Two Band)** |
| 31825 | Cap—Dust cap for cone center |
| 11469 | Coil—Hum neutralizing coil (L12) |
| 33116 | Coil—Speaker field coil (L11) |
| 31275 | Cone—Speaker cone and voice coil (L13) |
| 5118 | Plug—3-prong male for speaker |
| 33115 | Speaker—Speaker complete |
| 14358 | Screw—Screw, washer, and lockwasher to hold core in yoke |
| 31301 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil |
| | **MISCELLANEOUS ASSEMBLIES Model U-123 (Two Band)** |
| 32798 | Button—Push button |
| 13103 | Cap—Pilot lamp cap (bullseye) |
| 31487 | Clip—Spring clip to mount dial scale |
| 31095 | Cover—One set protective discs for call letter markers |
| 33117 | Dial—Glass dial scale |
| 31667 | Escutcheon—Dial scale escutcheon |
| 33118 | Escutcheon—Push button escutcheon |
| 30698 | Hinge—Cabinet lid hinge |
| 31391 | Knob—Tone control knob |
| 14359 | Knob—Tuning or radio-record switch knob |
| 31355 | Knob—Radio-record switch knob |
| 30773 | Knob—Volume control knob |
| 30991 | Marker—One set station call letter markers |
| 32870 | Screen—Phonograph compartment lamp screen. |
| 31470 | Spring—Motorboard mounting springs, bolts, and washers (4 required) |
| 32721 | Spring—Retaining spring for push button |
| 30330 | Spring—Retaining spring for tone control knob. |
| 14270 | Spring—Retaining spring for tuning, volume control, or switch knob |
| 4982 | Spring—Retaining spring for radio-record switch knob |
| 31478 | Support—Cabinet lid support |

REPLACEMENT PARTS
AUTOMATIC RECORD CHANGER
MODEL U-123
REFER TO RP-139
PAGE 698C

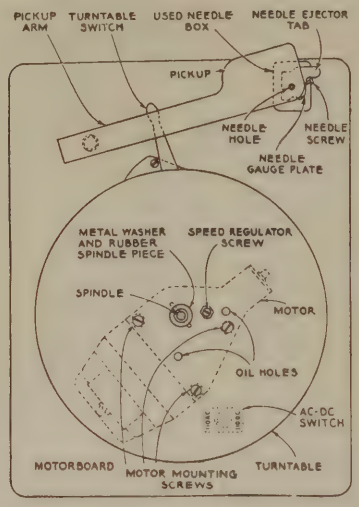
# MODELS UY-122E and UY-124

Chassis No. RC-352B and RC-352C

## Seven-Tube, Three-Band, Electric-Tuning, AC-DC Superheterodyne Victrolas



*Model UY-122E.*




*Motorboard Details.*

*Model UY-124.*

## General Description

The **circuit** of Models UY-122E and UY-124 is the same as Model 97Y, except for the phonograph circuit which is shown at right. For other circuit details, refer to Service Data for Model 97Y.

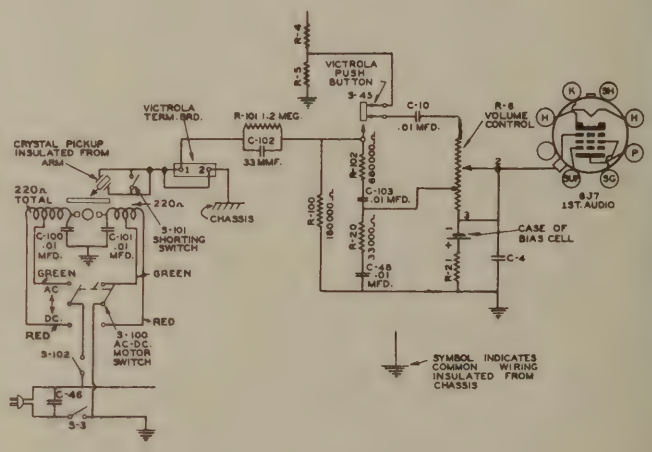
**Alignment procedure, adjustments for electric tuning, voltages, and general service data,** are the same as for Model 97Y.

**Replacement parts** for Models UY-122E and UY-124 are listed on the following page.

The **phonograph motor** has a switch to permit operation on 105-125 volts d.c., or 105-125 volts, 50-60 cycles a.c. The speed regulator screw should be adjusted for 78 r.p.m.

**Lubrication** should be maintained every six months, applying a few drops of light oil in each oil hole and at the spindle bearing.

The **turntable switch** should trip to the "off" position when the needle is 1¾ inches from the centerline of the turntable spindle.




*Phonograph Circuit, Models UY-122E, UY-124.*

## REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 30284 | Ballast—Ballast resistor tube (R22, R23) |
| 31767 | Board—Antenna-ground terminal board |
| 31579 | Board—Phonograph terminal board |
| 14338 | Bushing—Variable condenser mounting bushing and screws |
| 31400 | Capacitor—Adjustable trimmer capacitor, two sections 2-10 mmfd. and one section 3-30 mmfd. (C21, C23, C25) |
| 14079 | Capacitor—6.8 mmfd. (C1) |
| 31387 | Capacitor—Antenna coil trimmer capacitor bank—20-470 mmfd. (C31, C32, C33, C34, C35, C36) |
| 12948 | Capacitor—33 mmfd. (C3, C102) |
| 12725 | Capacitor—150 mmfd. (C49) |
| 13003 | Capacitor—180 mmfd. (C37) |
| 30433 | Capacitor—470 mmfd. (C2) |
| 31381 | Capacitor—620 mmfd. (C24) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 4881 | Capacitor—3,300 mmfd. (C22) |
| 12897 | Capacitor—4,700 mmfd. (C47) |
| 31405 | Capacitor—6,000 mmfd. (C27) |
| 4838 | Capacitor—.005 mfd. (C14, C43) |
| 14393 | Capacitor—.01 mfd. (C10, C48, C103) |
| 11315 | Capacitor—.015 mfd. (C12, C17) |
| 4886 | Capacitor—.05 mfd. (C13, C20, C44) |
| 4839 | Capacitor—0.1 mfd. (C38, C46) |
| 12484 | Capacitor—0.25 mfd. (C4, C45) |
| 31576 | Capacitor—Comprising one 32 mfd., one 20 mfd., and one 16 mfd. section (C15, C18, C19) |
| 31584 | Capacitor—40 mfd. (C16) |
| 30904 | Capacitor—100 mfd. (C5, C6, C7, C8) |
| 31581 | Cell—Bias cell |
| 31382 | Clip—Mounting clip for coils and cores on oscillator bank |
| 31402 | Coil—Antenna coil (L1, L2, L3) |

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31401 | Coil—Oscillator coil (L4, L5, L6, L7, L8, L9, C24) |
| 31385 | Coil—Push button oscillator coil (L37, L38) |
| 31384 | Coil—Push button oscillator coil (L39, L40) |
| 31383 | Coil—Push button oscillator coil (L41, L42) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 5119 | Connector—3-contact female connector plug for speaker cable |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 31374 | Cord—Drum drive cord |
| 31375 | Cord—Indicator pointer drive cord |
| 30905 | Core—Adjustable core for I.F. transformer |
| 31386 | Core—Adjustable core and stud assembly for oscillator bank |
| 31372 | Drum—Variable condenser drive cord drum and calibrator |
| 31580 | Holder—Bias cell holder |
| 31480 | Lamp—Dial lamp |
| 30868 | Plug—2-contact female for motor power cable |
| 31373 | Pulley—Drive cord pulley |
| 5066 | Reactor—(L16) |
| 30284 | Resistor—Ballast resistor (R22, R23) |
| 30880 | Resistor—150 ohms, ½ watt (R12) |
| 30694 | Resistor—3,900 ohms, ½ watt (R15) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4) |
| 12738 | Resistor—27,000 ohms, ½ watt (R18) |
| 12454 | Resistor—33,000 ohms, ½ watt (R2, R20) |
| 14560 | Resistor—100,000 ohms, ½ watt (R9, R14) |
| 13698 | Resistor—180,000 ohms, ½ watt (R100) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 12199 | Resistor—270,000 ohms, ½ watt (R19) |
| 14983 | Resistor—330,000 ohms, ½ watt (R8) |
| 12285 | Resistor—470,000 ohms, ½ watt (R1, R21) |
| 12413 | Resistor—680,000 ohms, ½ watt (R102) |
| 30208 | Resistor—1.2 meg., ½ watt (R101) |
| 12679 | Resistor—2.2 meg., ½ watt (R3) |
| 14343 | Retainer—Drive cord pulley retainer |
| 14887 | Retainer—Retainer for drive cord pulley |
| 4669 | Screw—No. 8-32 square-head set screw for drum, Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 31199 | Shield—Dial lamp shield |
| 12110 | Shield—Radiotron shield cap |
| 31365 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 31313 | Spring—Tension spring for station selector push button switch latch bar |
| 31418 | Spring—Indicator or drum drive cord tension spring |
| 31370 | Switch—Push button selector switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39, S40, S41, S42, S43, S44, S45) |
| 31398 | Switch—Range switch (S1, S2) |
| 30902 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 30903 | Transformer—Second i-f transformer (L12, L13, C7, C8) |
| 30284 | Tube—Ballast resistor tube (R22, R23) |
| | **MOTOR ASSEMBLIES** |
| 32007 | Escutcheon—Motor changeover switch escutcheon |
| 32033 | Field—Motor field coils and laminations |
| 32034 | Governor—Motor governor complete |
| 32006 | Motor—105-125 volts, 60 cycles A.C. and 105-125 volts D.C., complete with switch (M1) |
| 31616 | Screw—Motor rotor bearing screw and nut |
| 31620 | Screw—Motor speed regulator screw and nut |
| 32035 | Shaft—Motor turntable spindle shaft and gear |
| 31823 | Switch — D.P.S.T. motor changeover switch (S100) |
| 31622 | Washer—Motor spindle shaft thrust bearing washers (1 metal, 1 felt) |
| | **MOTOR BOARD ASSEMBLIES** |
| 9848 | Cup—Used needle cup and lid complete |
| 31464 | Damper—One rubber spindle cap and one metal damper plate |
| 31465 | Mounting—Pickup arm base mounting — one rubber washer, one lockwasher, one nut |
| 30870 | Plug—2-contact male plug for motor and switch leads |
| 31158 | Screw—Motor mounting screws, washers, and spacers (sufficient for one motor) |
| 31155 | Spring—Used needle cup lid spring |
| 30100 | Spring—Automatic switch springs — one long spring and one short spring |
| 31466 | Switch—Automatic motor switch and switch lever |
| 31467 | Switch—Switch only — for automatic switch (S102) |
| 31463 | Turntable |

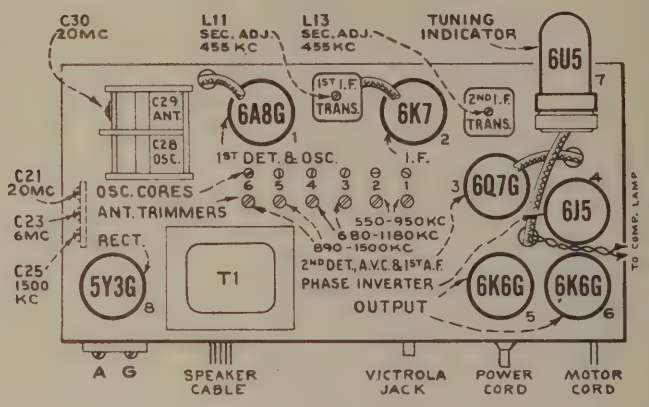
| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| 32134 | Bushing—Pickup needle insertion guide—mounts on top of crystal cartridge |
| 31156 | Crystal—Pickup crystal cartridge, needle screw and shorting switch, less bushing, Stock No. 32134 (S101) |
| 32016 | Pickup and arm complete |
| 31160 | Screw—Needle screw |
| 31469 | Shaft—Pickup pivot arm and shaft assembly complete with base |
| | **SPEAKER ASSEMBLIES** Model UY124 (Speaker RL 71 A-1) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 5118 | Plug—3-contact male plug for speaker |
| 31798 | Speaker—Less output transformer |
| 14628 | Transformer—Output transformer (T1) |
| | **SPEAKER ASSEMBLIES** Model UY122E (Speaker RL 73-5) |
| 31310 | Cone—Speaker cone and voice coil (L14) |
| 5118 | Plug—3-contact male plug for speaker |
| 31997 | Speaker complete |
| 14628 | Transformer—Output transformer (T1) |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31397 | Button—Station selector push button |
| 31456 | Cover—8 protective covers for push button markers |
| 31591 | Dial—Station selector dial scale—Model UY124 |
| 31406 | Dial—Station selector dial scale—Model UY122E |
| 31395 | Escutcheon—Tuning dial escutcheon only less push buttons and dial scale |
| 30698 | Hinge—Cabinet lid hinge—Model UY124 |
| 31103 | Hinge—Cabinet lid hinge—Model UY122E |
| 31392 | Indicator—Indicator pointer, carriage, and clip |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31458 | Marker—"Dial Tuning" marker for push button—Model UY122E |
| 31460 | Marker—"Dial Tuning" marker for push button—Model UY124 |
| 31457 | Marker—"Record Player" marker for push button—Model UY122E |
| 31459 | Marker—"Record Player" marker for push button—Model UY124 |
| 31589 | Marker—Station call letter markers — Model UY122E |
| 31590 | Marker—Station call letter markers — Model UY124 |
| 31393 | Screen—Dial color screen |
| 11210 | Screw—Chassis mounting screws, washers, and lockwashers—Model UY124 |
| 31471 | Screw—Chassis mounting screws, washers, and lockwashers—Model UY122E |
| 31470 | Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 required) |
| 4982 | Spring—Retaining spring for knob, Stock No. 14359 |
| 14270 | Spring—Retaining spring for knob, Stock Nos. 30773 and 31355 |
| 30330 | Spring—Retaining spring for knob, Stock No. 31391 |
| 30946 | Support—Cabinet lid support—Model UY122E |
| 11831 | Support—Cabinet lid support—Model UY124 |

# MODEL U-125

## Chassis No. RC-386

## Eight-Tube, Three-Band, Electric-Tuning, A-C, Superheterodyne Victrola

*Model U-125*




*Tube and Trimmer Locations*

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "Medium Wave" (B) | 2.3-7 mc |
| "Short Wave" (C) | 7-22 mc |

R-F ALIGNMENT FREQUENCIES

| | |
|---|---|
| "Short Wave" (C) | 20 mc (osc., ant.) |
| "Medium Wave" (B) | 6 mc (osc.) |
| "Standard Broadcast" (A) | 1,500 kc (osc.) |

Six Electric Tuning Positions.....550-1,500 kc
2 stations between approximately 550- 950 kc (Buttons 1 and 2)
2 stations between approximately 680-1,180 kc (Buttons 3 and 4)
2 stations between approximately 890-1,500 kc (Buttons 5 and 6)

Intermediate Frequency.....455 kc

RCA TUBE COMPLEMENT

| | | | |
|---|---|---|---|
| (1) | RCA-6A8-G | (5) | RCA-6K6-G — Power Output |
| (2) | RCA-6K7 — Intermediate-Frequency Amplifier | (6) | RCA-6K6-G — Power Output |
| (3) | RCA-6Q7-G — Second Detector, 1st A-F, and A.V.C. | (7) | RCA-6U5 — "Magic Eye" Tuning Indicator |
| (4) | RCA-6J5 — Phase Inverter | (8) | RCA-5Y3-G — Rectifier |

Pilot Lamps (4).....1 Mazda 44, 6.3 volts, 0.25 amp.; 3 Mazda 47, 6.3 volts, 0.15 amp.

POWER SUPPLY RATINGS

| | | | |
|---|---|---|---|
| A-6 | 105-125 volts, | 60 cycles, | 115 watts |
| A | 105-125 volts, | 50-60 cycles, | 115 watts |
| B-2 | 105-125 volts, | 25 cycles, | 115 watts |
| C-6 | 100-130/140-160/200-250 volts, | 60 cycles, | 115 watts |
| C | 100-130/140-160/200-250 volts, | 50-60 cycles, | 115 watts |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 5 watts |
| Maximum | 5.5 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 12-inch Electrodynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |

PHONOGRAPH **RP-132**

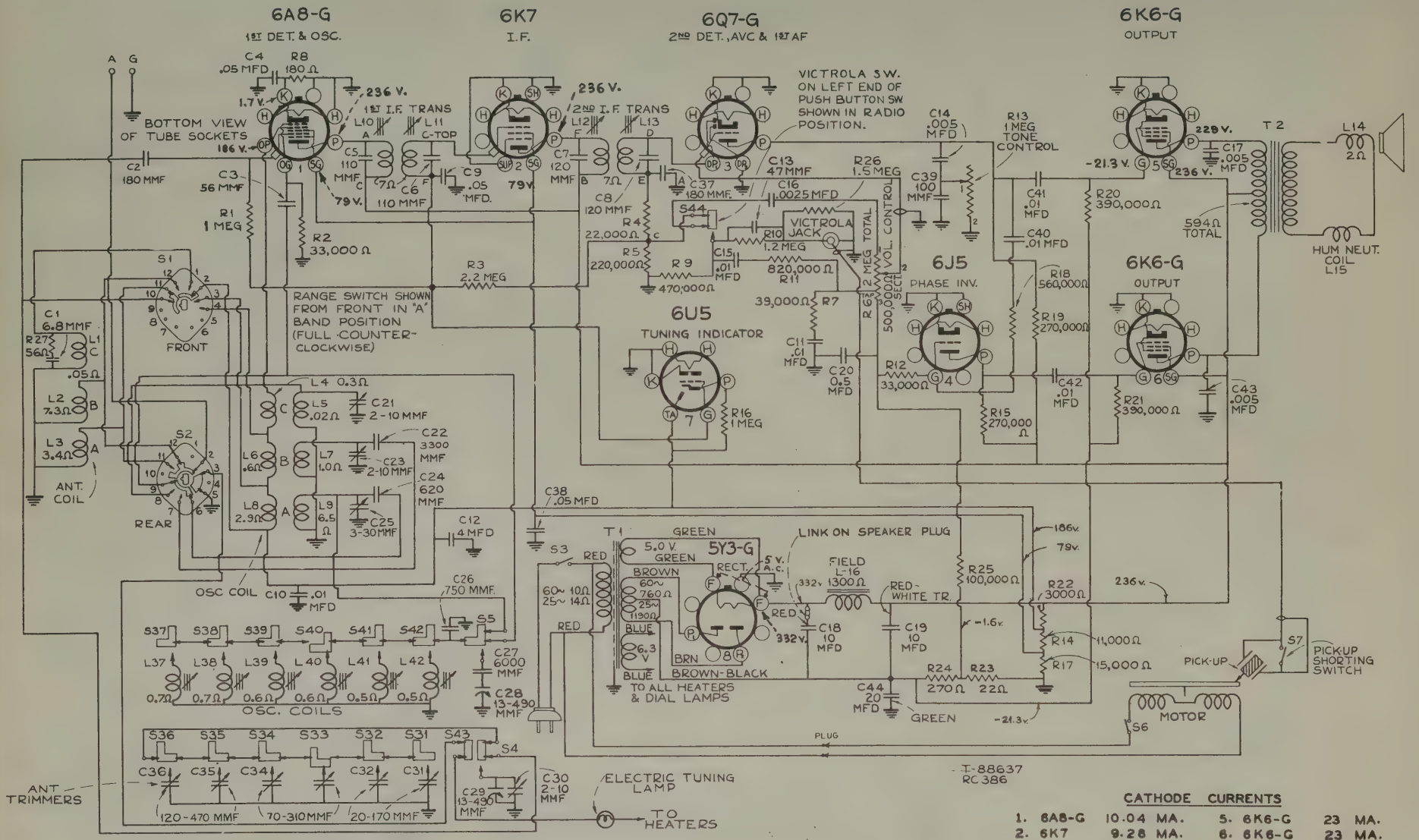
| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch or seven 12-inch |
| Turntable Speed | 78 r.p.m., adjustable |

PICKUP

| | |
|---|---|
| Type | Crystal |
| Impedance | 100,000 ohms at 1,000 cycles |
| Average Output | 1.5 volts at 1,000 cycles across 500,000 ohm load |

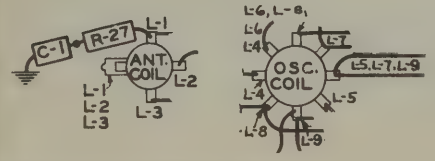
**REFER TO INDEX FOR DATA ON AUTOMATIC RECORD CHANGER**

**REFER TO MODEL 96K2 FOR ALIGNMENT PROCEDURE AND CHANGES IN CHASSIS MARKED "M" OR "R"**




| CATHODE CURRENTS | | | |
|---|---|---|---|
| 1. 6A8-G | 10.04 MA. | 5. 6K6-G | 23 MA. |
| 2. 6K7 | 9.28 MA. | 6. 6K6-G | 23 MA. |
| 3. 6Q7-G | 0.43 MA. | 7. 6U5 | 1.9 MA. |
| 4. 6J5 | 0.74 MA. | | |

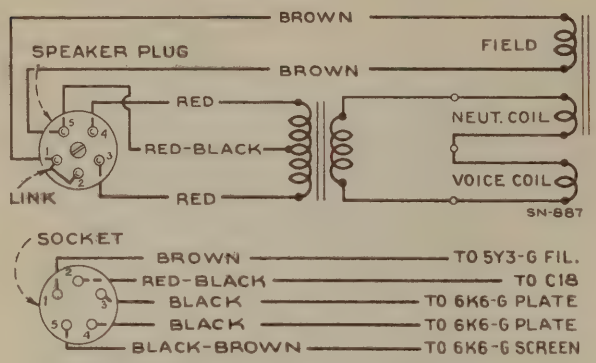
TOTAL RECTIFIED "B" CURRENT — 74.0 MA.




On some models R-26 is 3 megs. For replacement, use 1.5 meg. resistor Stock No. 12201.

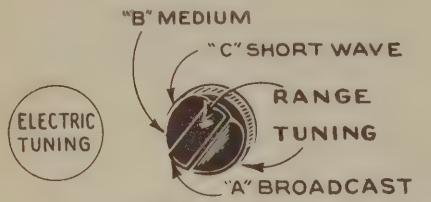
*** NOTE.**—Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower, depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

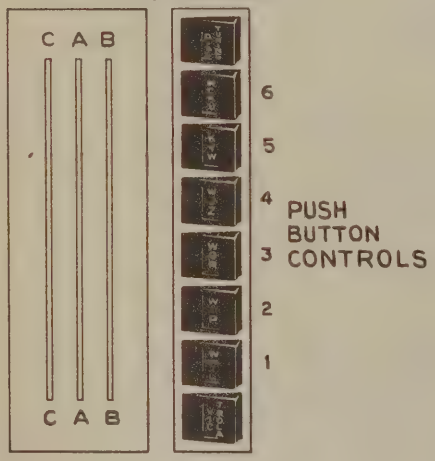



SPEAKER PLUG CONNECTIONS

*Connections and Colors of Loudspeaker and Cable*



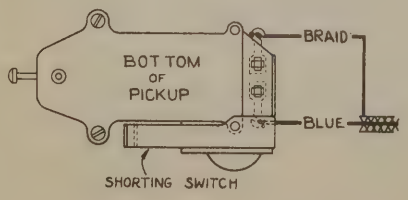

RANGE-TUNING CONTROL



MAGIC EYE — POWER-TONE VOLUME CONTROL

The rear push-button is for dial tuning
The front push-button is the Victrola switch

*Location of Controls*




*Pickup Connections*

**Precautionary Lead Dress.—**

1. Dress red leads from power transformer to power switch (S3), in corner of chassis and away from volume control terminals.
2. Dress brown lead from push-button switch to gang over end of switch, and away from C27 and bus between S5 and range switch.
3. Leads to C27 must be as short as possible.
4. Blue lead from range switch to oscillator coil must be as short as possible and dressed away from other leads. All leads should be dressed away from antenna coil.
5. Leads across back of chassis must be dressed under electrolytic away from Victrola jack.
6. Parts and leads should be dressed away from R22-R14 as it becomes heated.
7. Leads from oscillator coil to trimmers must be dressed away from coil.
8. Green lead from S4 to range switch must be clear of other leads and away from front edge of chassis.

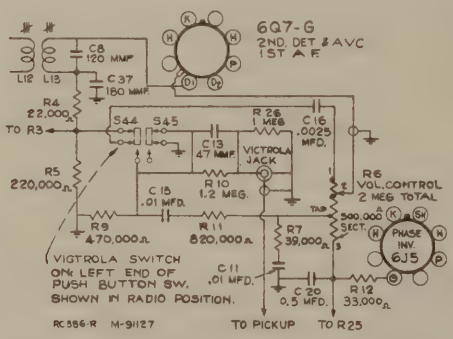
## REDUCTION OF LOW FREQUENCY RESPONSE

The phono. low frequency response may be lessened by installing a 50,000 ohm 1/4 watt resistor across the terminals of the crystal pickup.

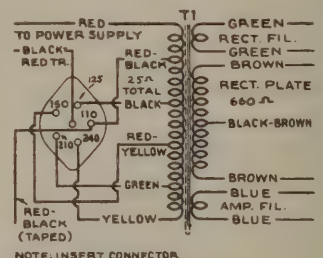
## PHONO PLAY-THRU ON RADIO

On early models phono reproduction can be had when push-buttons are in "dial tuning" or "push button" position. This may be eliminated at a slight loss of high frequency response by removing $C_{15}$ and $R_{11}$.

The phono switching circuit in late U-125 is changed as shown below to eliminate cross-talk.

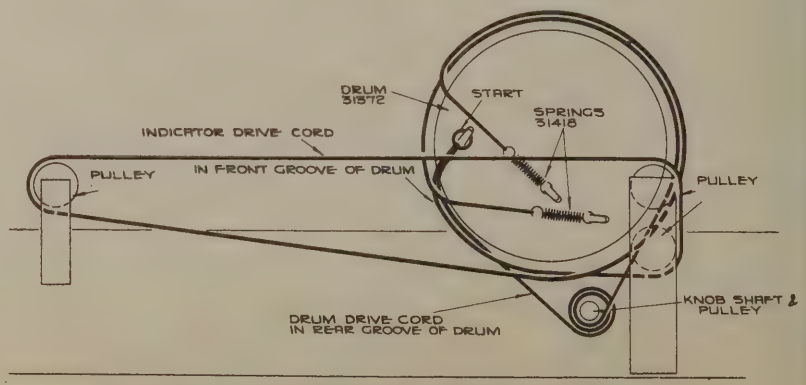



*Model U-125 Victrola Switch Circuit Used in 3rd Production (Using Stock No. 32498 Push-Button Switch)*




UNIVERSAL TRANS. CONNECTIONS

Above—Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)




DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

*Arrangement of Drive Cords for Tuning Condenser and Dial Indicator*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RECEIVER ASSEMBLIES** |
| 14517 | Board—Antenna ground terminal board |
| 30752 | Bracket—Magic Eye mounting bracket |
| 31400 | Capacitor—Triple adjustable trimmer two sections 2-10 mmfd., one section 3-30 mmfd. (C21, C23, C25) |
| 14079 | Capacitor—6.8 mmfd. (C1) |
| 31387 | Capacitor—Antenna coil trimmer capacitor bank 20-470 mmfd. (C31, C32, C33, C34, C35, C36) |
| 13141 | Capacitor—47 mmfd. (C13) |
| 12723 | Capacitor—56 mmfd. (C3) |
| 12720 | Capacitor—100 mmfd. (C39) |
| 14262 | Capacitor—110 mmfd. (C5, C6) |
| 12404 | Capacitor—120 mmfd. (C7, C8) |
| 13003 | Capacitor—180 mmfd. (C2) |
| 14712 | Capacitor—180 mmfd. (C37) |
| 31381 | Capacitor—620 mmfd. (C24) |
| 31435 | Capacitor—750 mmfd. (C26) |
| 4881 | Capacitor—3,300 mmfd. (C22) |
| 31405 | Capacitor—6,000 mmfd. (C27) |
| 5107 | Capacitor—.0025 mfd. (C16) |
| 4838 | Capacitor—.005 mfd. (C14, C17, C43) |
| 4858 | Capacitor—.01 mfd. (C10, C40, C41, C42) |
| 14393 | Capacitor—.01 mfd. (C11, C15) |
| 30882 | Capacitor—.05 mfd. (C4, C9, C38) |
| 30867 | Capacitor—0.5 mfd. (C20) |
| 32145 | Capacitor—4 mfd. (C12) |
| 32142 | Capacitor—Comprising two 10 mfd., one 20 mfd. sections (C18, C19, C44) |
| 31382 | Clip—Oscillator coil and core mounting clip |
| 31402 | Coil—Antenna coil—A, B, and C bands (L1, L2, L3) |
| 31401 | Coil—Oscillator coil—A, B, and C bands (L4, L5, L6, L7, L8, L9) |
| 31383 | Coil—Oscillator coil—A band (L41, L42) |
| 31384 | Coil—Oscillator coil—A band (L39, L40) |
| 31385 | Coil—Oscillator coil—A band (L37, L38) |
| 31369 | Condenser—2-gang variable tuning condenser (C28, C29, C30) |
| 31366 | Control—Volume control, tone control, and on-off switch (R6, R13, S3) |
| 31375 | Cord—Indicator pointer drive cord |
| 31374 | Cord—Variable condenser drum drive cord |
| 30905 | Core—Adjustable core for i-f transformer |
| 31386 | Core—Adjustable core and stud for oscillator coil, Stock Nos. 31383, 31384, and 31385 |
| 31372 | Drum—Variable condenser drive cord drum and calibration dial |
| 11891 | Lamp—Phono. compartment lamp |
| 31480 | Lamp—Dial and "Electric Tuning" lamp |
| 30868 | Plug—2-contact female plug for motor cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 31373 | Pulley—Drive cord pulley |
| 32143 | Resistor—Voltage divider comprising one 11,000-ohm, one 3,000-ohm, one 22-ohm, and one 270-ohm sections (R14, R22, R23, R24) |
| 13220 | Resistor—56 ohms, ½-watt (R27) |
| 30545 | Resistor—180 ohms, ½-watt (R8) |
| 5114 | Resistor—15,000 ohms, 1-watt (R17) |
| 14284 | Resistor—22,000 ohms, 1/10-watt (R4) |
| 12454 | Resistor—33,000 ohms, ½-watt (R2, R12) |
| 12266 | Resistor—39,000 ohms, ½-watt (R7) |
| 14560 | Resistor—100,000 ohms, ½-watt (R25) |
| 11398 | Resistor—220,000 ohms, 1/10-watt (R5) |
| 12199 | Resistor—270,000 ohms, ½-watt (R15, R19) |
| 13479 | Resistor—390,000 ohms, ½-watt (R20, R21) |
| 12285 | Resistor—470,000 ohms, ½-watt (R9) |
| 12486 | Resistor—560,000 ohms, ½-watt (R18) |
| 30963 | Resistor—820,000 ohms, ½-watt (R11) |
| 12013 | Resistor—1 meg., 1/10-watt (R16) |
| 13730 | Resistor—1 meg., ½-watt (R1) |
| 30208 | Resistor—1.2 meg., ½-watt (R10) |
| 12201 | Resistor—1.5 meg., ½-watt (R26) |
| 12679 | Resistor—2.2 meg., ½-watt (R3) |
| 14343 | Retainer—Retaining spring for station selector knob shaft |
| 14887 | Retainer—Drive cord pulley retainer |
| 4669 | Screw—No. 8-32 square head set screw for drum, Stock No. 31372 |
| 31368 | Shaft—Station selector knob shaft and pulley |
| 3682 | Shield—Tube shield |
| 30868 | Socket—2-contact female socket for motor power cable |
| 12493 | Socket—5-contact female socket for speaker cable |
| 13871 | Socket—Magic Eye socket |
| 14278 | Socket—Pickup input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Indicator or drum drive cord tension spring |
| 31398 | Switch—Range switch (S1, S2) |
| 31370 | Switch—Station selector push-button switch (S4, S5, S31, S32, S33, S34, S35, S36, S37, S38, S39. S40, S41, S42, S43, S44) |
| 14376 | Transformer—First i-f transformer (L10, L11, C5, C6) |
| 14283 | Transformer—Second i-f transformer (L12, L13, C7, C8, C37, R4, R5) |
| 31445 | Transformer—Power transformer 105-125 volts, 25-60 cycles (T1) |
| 31446 | Transformer—Power transformer 100-130/140-160/200-250 volts, 50-60 cycles (T1) |
| 32144 | Transformer—Power transformer 105-125 volts, 50-60 cycles (T1) |
| | **SPEAKER ASSEMBLIES (RL-70H-5)** |
| 13866 | Cap—Dust cap for cone center |
| 12012 | Coil—Field coil (L16) |
| 11469 | Coil—Neutralizing coil (L15) |
| 31275 | Cone—Speaker cone and voice coil (L14) |
| 31539 | Plug—5-contact male plug for speaker |
| 32146 | Speaker complete |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **MISCELLANEOUS ASSEMBLIES** |
| 12038 | Band—Rubber band for Magic Eye |
| 31397 | Button—Station selector push-button |
| 13103 | Cap—Pilot light jewel |
| 31456 | Cover—8-protective covers for push-button markers |
| 31541 | Cushion—Motor plate mounting cushions and clamps sufficient for one instrument |
| 31591 | Dial—Station selector dial scale |
| 31407 | Escutcheon—Magic Eye or Electric Tuning indicator escutcheon |
| 31395 | Escutcheon—Tuning dial escutcheon only, less push-buttons and dial scale |
| 30698 | Hinge—Cabinet lid hinge |
| 31543 | Indicator—Electric Tuning indicator disc |
| 31392 | Indicator—Indicator pointer, carriage, and clip |
| 31355 | Knob—Range switch knob |
| 14359 | Knob—Station selector knob |
| 31391 | Knob—Tone control knob |
| 30773 | Knob—Volume control knob |
| 31460 | Marker—"Dial Tuning" marker for push-button |
| 31459 | Marker—"Victrola" marker for push-button |
| 31590 | Markers—Station call letter markers |
| 31393 | Screen—Dial color screen |
| 31760 | Screen—Phono. compartment lamp screen |
| 11210 | Screw—Chassis mounting screws, washers, and lockwashers |
| 31470 | Springs—Motorboard suspension top spring, bottom spring, screw, and lockwasher (4 reqd.) |
| 4982 | Spring—Retaining spring for knob Stock No. 14359 |
| 14270 | Spring—Retaining spring for knob Stock Nos. 30773 and 31355 |
| 30330 | Spring—Retaining spring for knob Stock No. 31391 |
| 31478 | Support—Cabinet lid support |

**Motor Bracket Flexible Mount:**

Mechanical hum resulting from motor vibration is generally governed by cabinet resonance, amount of torque in the particular motor, and the various mountings involved. Tolerances are maintained on each of these items so they balance out and no hum interference develops. An occasional instrument, however, may have accentuated resonance or vibration which are additive in effect. In order to remedy this condition, a more flexible cushion should be used for supporting the motor bracket to the cabinet. Replacement Stock No. 31541 will include two sets of rubber cushions, one gray colored and the other black. The gray is quite flexible, whereas the black is relatively stiff. The black is for use on the Model U-125 particularly where mechanical hum is present, and the gray is for use on other phonograph combinations where No. 31541 is specified.

REPLACEMENT PARTS
AUTOMATIC RECORD CHANGER
REFER TO RP-132
PAGE 698C

# AUTOMATIC RECORD CHANGERS

## TYPE NO. RP-132, RP-139, RP-140 and RP-145

Type RP-132 or Stock No. 9844.
Uses a governor type motor. Models 11QU and 12QU have a lever type speed control. Type RP-132 does not have pickup muting switch.

Type RP-139
Uses an induction motor (not governor type). The turntable is driven thru a worm gear in the motor housing.

Type RP-140
Uses a governor type motor, has flat type pickup locating lever spring "9M" like RP-139.

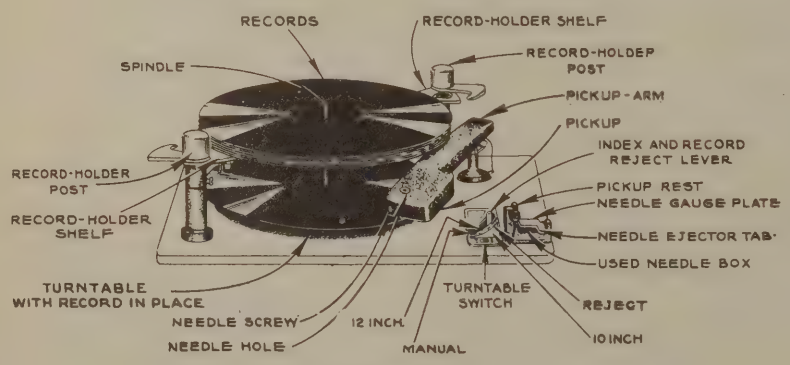
Type RP-145
Uses a capacitor induction motor. The turntable is driven thru a friction drive disc mounted on the turntable spindle.

Variations of each type denoted by a suffix letter such as RP-139A, RP-145E, etc. indicate variations in tone arm style, motor switch, etc.

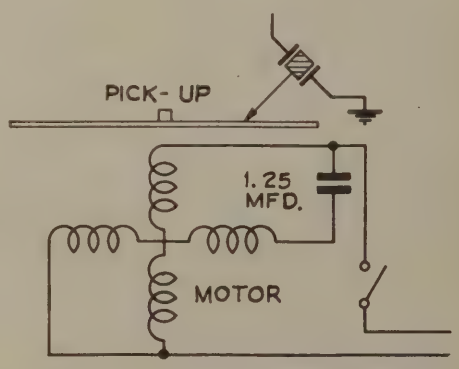
Models QU-5, U-46 and QU-51 use a mercury switch to shut off the motor when the pickup is on its rest.

### "RP" vs. "MODEL" NUMBERS

| | | | | | |
|---|---|---|---|---|---|
| QU-5 | RP-145E | U-30 | RP-132M | U-123 | RP-139B |
| 11QU | RP-132A | U-40 | RP-139A | U-125 | RP-132C |
| 12QU | RP-132A | U-42 | RP-145 | U-128 | RP-132 |
| VA-22 | RP-139D | U-43 | RP-145 | U-129 | RP-132C |
| VA-22 | RP-145C | U-44 | RP-145 | U-129 | RP-132F |
| U-25 | RP-132M | U-45 | RP-139A | U-130 | RP-132C |
| U-26 | RP-132M | U-46 | RP-140 | U-132 | RP-132B |
| | | QU-51C | RP-145E | U-134 | RP-132B |



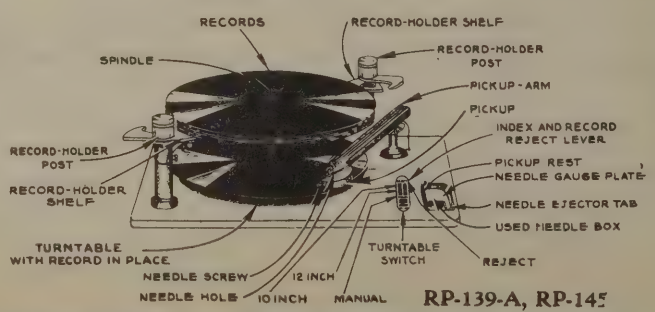

RP-132



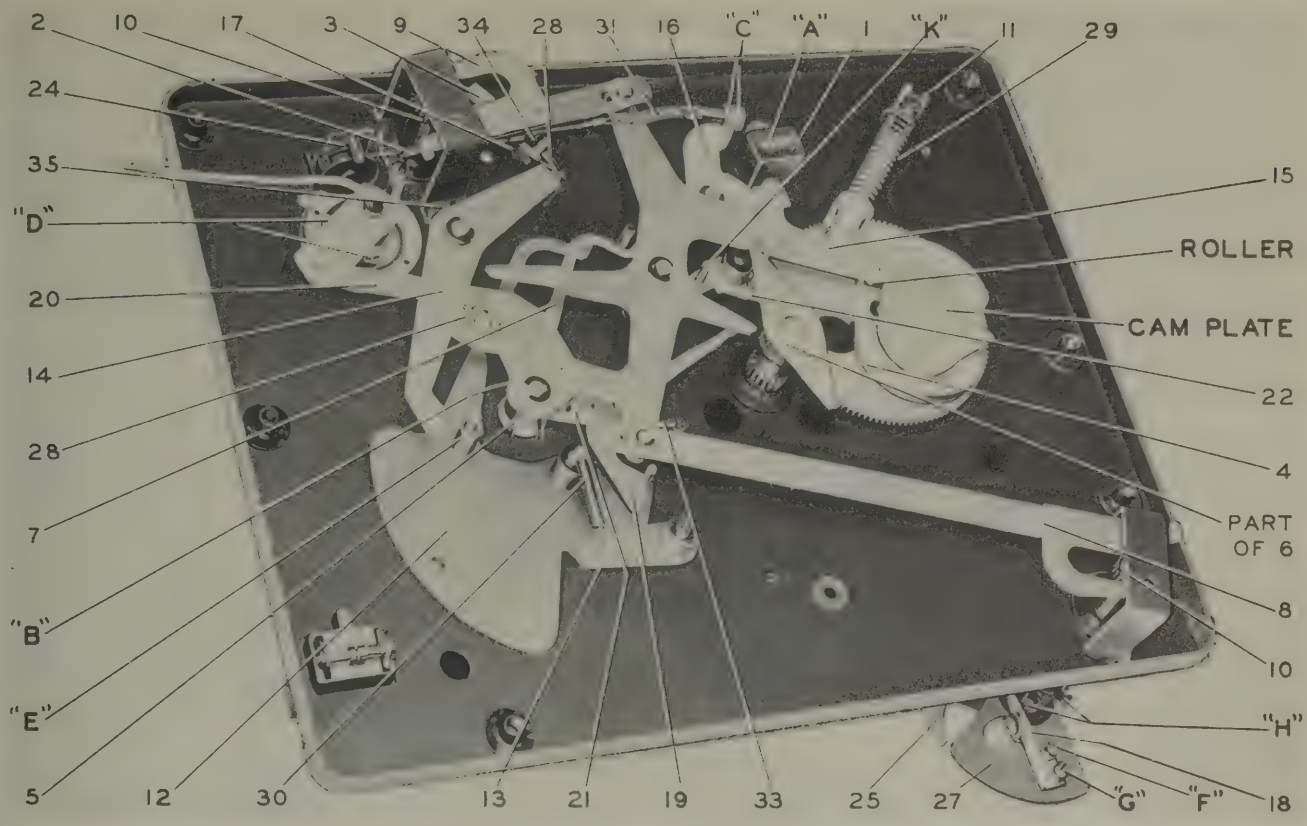

*Motor Schematic* RP-145

These record changers are available for operation on voltages and frequencies as follows:

| | |
|---|---|
| RP-139-A..... | 105-125 volts, 60 cycles, 21 watts |
| RP-139-A..... | 105-125 volts, 50 cycles, 21 watts |
| RP-139-A..... | 105-125 volts, 25 cycles, 22 watts |
| RP-145..... | 105-125 volts, 60 cycles, 15 watts |
| RP-145..... | 105-125 volts, 50 cycles, 15 watts |

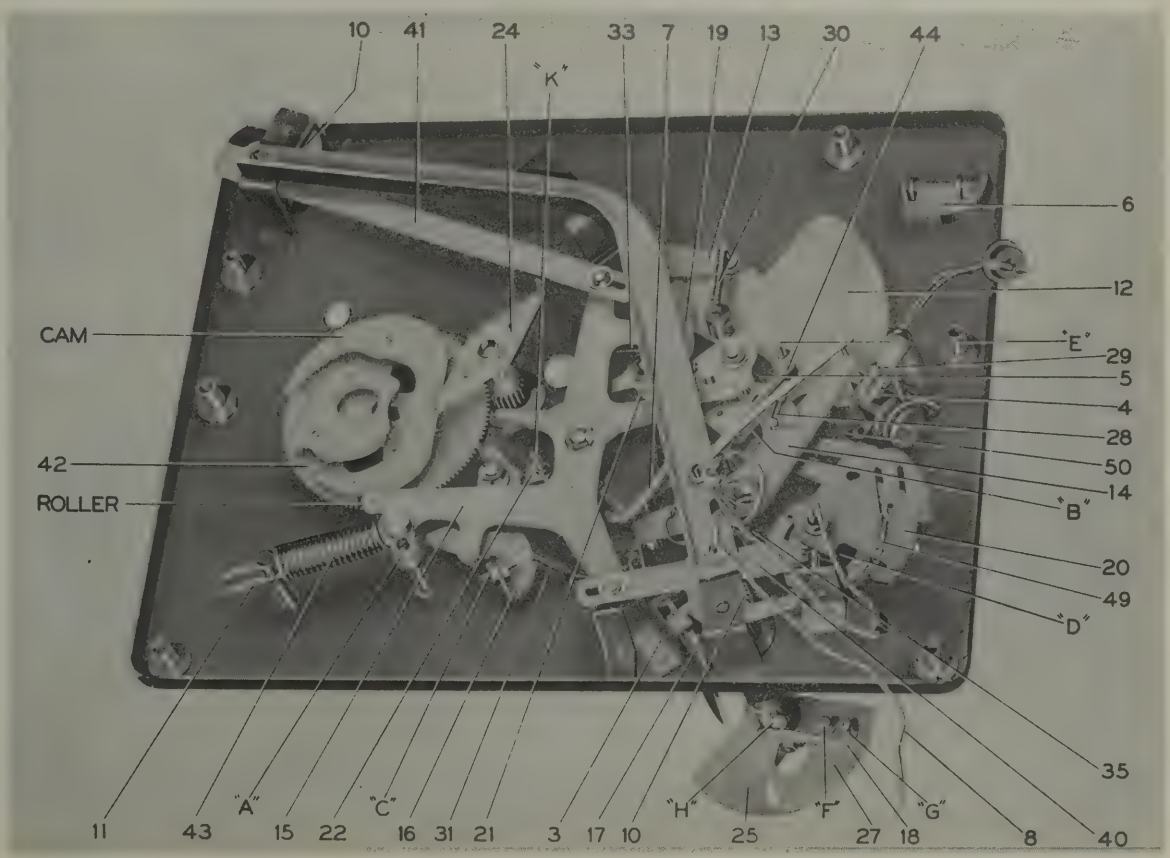



RP-139-A, RP-145



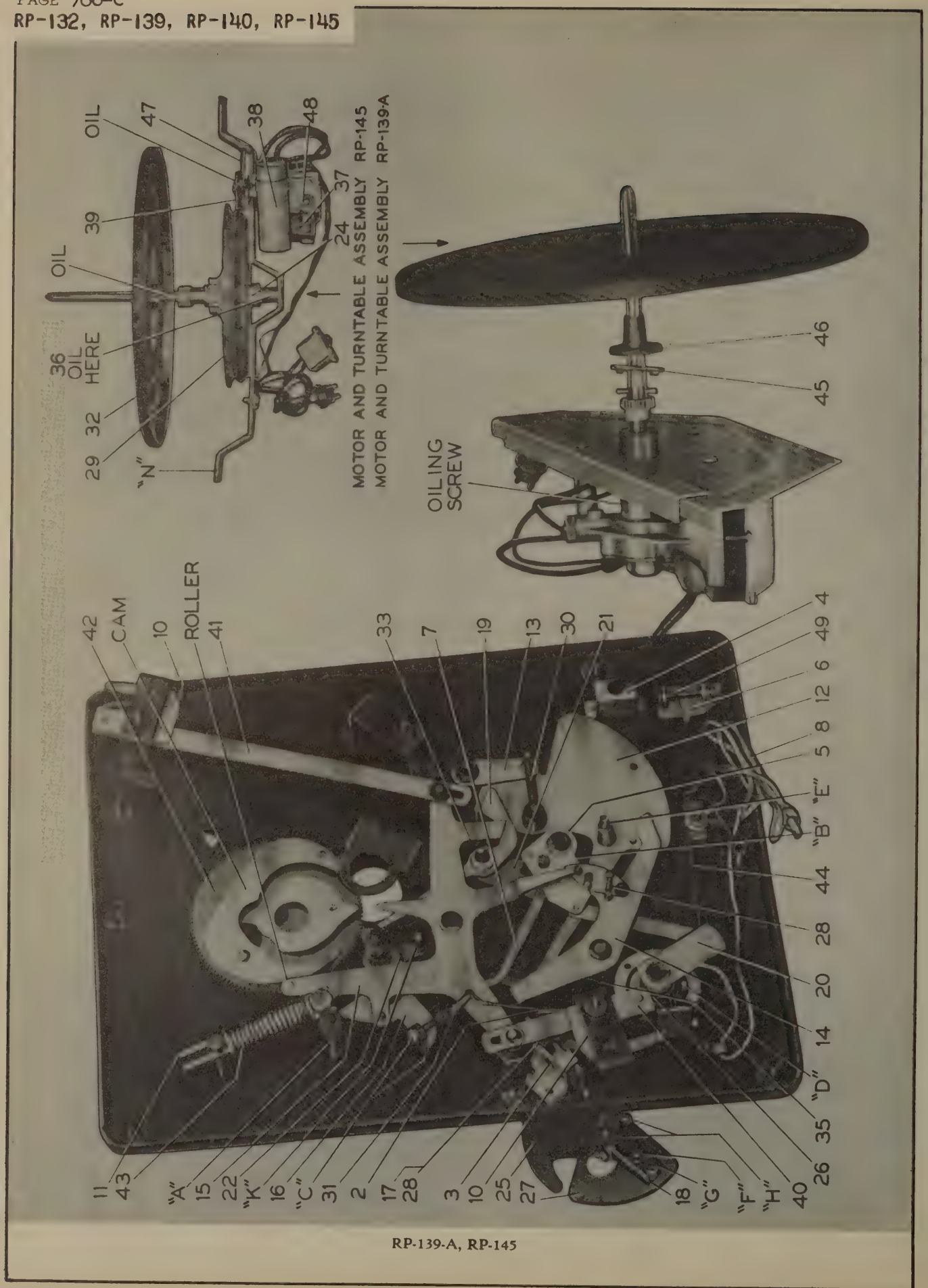

*Bottom View of Automatic Record Changer* RP-132

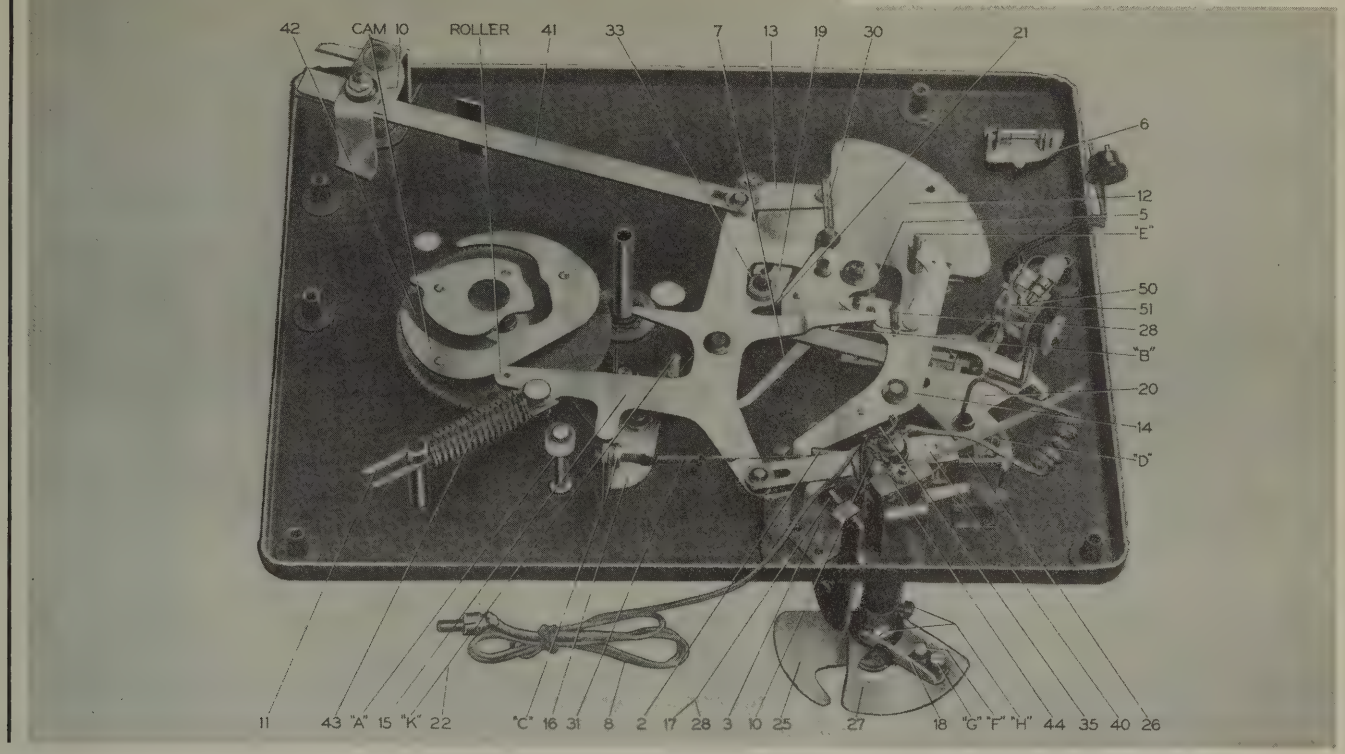
**NOTE: Numbers refer to parts—letters refer to adjustments.**




*Bottom View of Automatic Record Changer* RP-140 (U-46)

**NOTE: Numbers refer to parts—letters refer to adjustments.**


MOTOR AND TURNTABLE ASSEMBLY RP-145
MOTOR AND TURNTABLE ASSEMBLY RP-139-A
OIL
OIL
OIL
OIL HERE
OILING SCREW
CAM
ROLLER
"A"
"B"
"C"
"D"
"E"
"F"
"G"
"H"
"K"
"N"
11 43 15 22 16 31 2 17 28 3 10 25 27 18 40 26 35 14 20 28 44 5 8 12 6 49 4 45 46 29 32 36 39 47 38 48 37 24 42 10 41 33 7 19 13 30 21




## RP-145E (QU-5, QU-51C)

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc., are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

The 10 and 12 inch records must be absolutely flat for smooth operation.

### ADJUSTMENTS

**A. Main Lever.**—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. Rotate the turntable until the changer is out-of-cycle: and check rubber bumper bracket (A). The roller should clear the nose of the cam plate by approximately 1/16 inch.

**B. Friction Clutch.**—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight the needle will repeat grooves: if too loose, tripping will not occur at the end of the record.

**C. Pickup Lift Cable Screw.**—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward: at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface

**D. & E. Needle Landing on Record.** — The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position: see that pickup locating lever "17" is tilted fully toward turntable: rotate mechanism through cycle until needle is just ready to land on the record: then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4⅝ inches from the nearest side of the turntable spindle: loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17." Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D."

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable: push index lever to reject and return to 12 inch position: rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5⅛ inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motorboard, otherwise incorrect landing may occur with 10 inch records.

**F. & G. Record Separating Knife.** — The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .055 inch, and for the 12 inch record is .075 inch

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .052—.058 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F," adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

**H. Record Support Shelf.**—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustment be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where both separating knives have turned clockwise as far as the mechanism will turn them; lift record upward until it is in contact with both separating knives. Then loosen screws "H" and shift record shelves "27" so that the curved inner edges of the shelves are uniformly spaced approximately 1/16 inch from the record edge. Some backlash will be present in the rotation of these shelves. They should be adjusted so that the backlash permits them to move away from the record but not closer than the approximate 1/16 inch specified above. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H."

*If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.*

**J. Tone Arm Rest Support (not shown).** — When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motorboard. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

**K. Trip Pawl Stop Pin.**—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

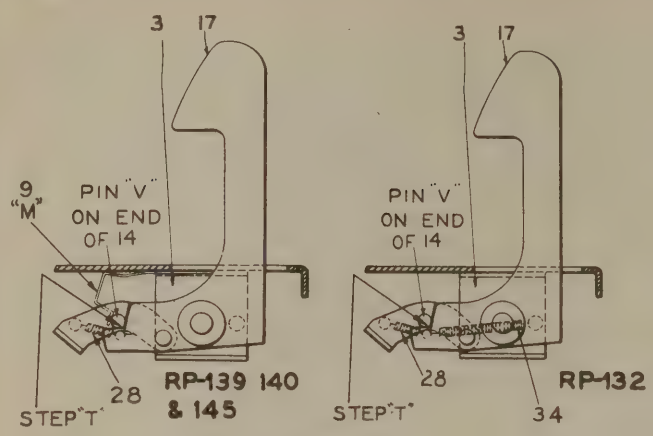
### MISCELLANEOUS SERVICE HINTS

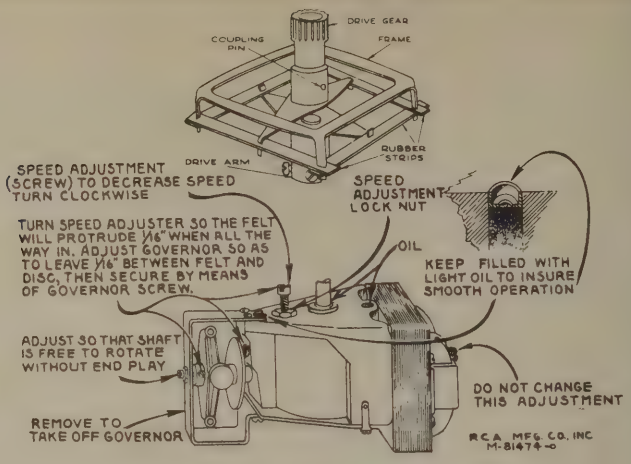
Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual misadjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A."
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E."
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E."
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B." Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C."
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; or instrument is not being operated at normal room temperature: oil, grease, dirt, or other foreign matter on motor spindle, main driving disc or idler pulley rubber tire. Clean with any quick drying naphtha. Also, the motor support bracket "N" should be moved in its mounting holes until the motor spindle is parallel to the turntable spindle and exactly at right angles to the main driving disc "29." The bracket mounting nuts should then be securely tightened.
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H."
11. When playing both types of records mixed and needle either lands in 10 inch position on 12 inch record or misses record entirely—Increase tension of mixed record discriminating lever spring "M."

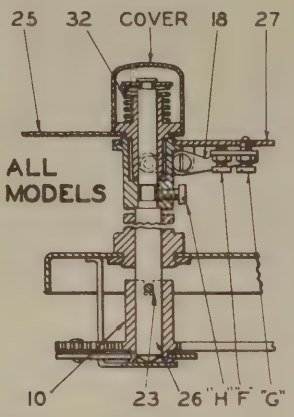
*ON RP-139, 140 & 145, SPRING "34" ON RP-132 (PAGE 702)

**RP-132, RP-139, RP-140, RP-145**

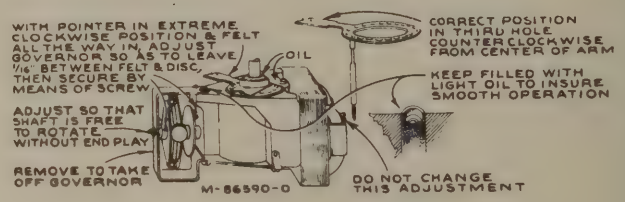




DRIVE GEAR
COUPLING PIN
FRAME
RUBBER STRIPS
DRIVE ARM
SPEED ADJUSTMENT (SCREW) TO DECREASE SPEED TURN CLOCKWISE
SPEED ADJUSTMENT LOCK NUT
TURN SPEED ADJUSTER SO THE FELT WILL PROTRUDE 1/16" WHEN ALL THE WAY IN. ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT AND DISC, THEN SECURE BY MEANS OF GOVERNOR SCREW.
OIL
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
DO NOT CHANGE THIS ADJUSTMENT
REMOVE TO TAKE OFF GOVERNOR
RCA MFG CO. INC
M-81474-0

*Motor Data and Coupling* **RP-132, RP-140**




*Details of Record Shelf Posts, and Locating Lever Assemblies*


WITH POINTER IN EXTREME CLOCKWISE POSITION & FELT ALL THE WAY IN, ADJUST GOVERNOR SO AS TO LEAVE 1/16" BETWEEN FELT & DISC, THEN SECURE BY MEANS OF SCREW
OIL
CORRECT POSITION IN THIRD HOLE COUNTERCLOCKWISE FROM CENTER OF ARM
KEEP FILLED WITH LIGHT OIL TO INSURE SMOOTH OPERATION
ADJUST SO THAT SHAFT IS FREE TO ROTATE WITHOUT END PLAY
REMOVE TO TAKE OFF GOVERNOR
M-86590-0
DO NOT CHANGE THIS ADJUSTMENT

**Models 11QU and 12QU,**
**lever-type speed control**

## REPLACEMENT STUDS

**For Main Lever, Cam-and-Gear, or Trip Pawl:**

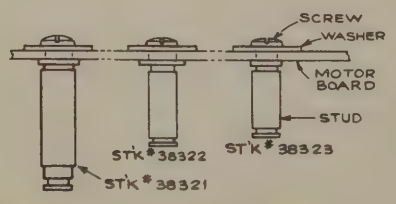
In automatic record changers of the RP-139A, 145, 152, 153, 155, and similar types, loosening of the mounting studs on which the main lever, cam-and-gear, or trip pawl are pivoted may be caused by jamming of the main lever against the pawl pin at the end of the change cycle due to one or more of the following reasons:

(a) The long arm of the main lever slides over the thin pawl pin instead of pushing against it during first half of cycle. **Check for bent arm on main lever.**

(b) After being cleared out of the way, the trip pawl bounces back due to vibration (dancing near mechanism, etc.) **Check the trip-pawl phosphor-bronze spring for sufficient "drag" or pressure against the pawl.**

(c) **The index lever is put into "REJECT" position while the mechanism is still in its change cycle.** Caution customer against this.

Loose studs may be quickly and easily replaced by using special replacement studs that are fastened to the motorboard by means of a screw and washer. Three different studs are available:




**Stock No.**

**38321** **Main Lever replacement stud, with screw and washer...**

**38322** **Cam-and-Gear replacement stud, with screw and washer.**

**38323** **Trip Pawl replacement stud, with screw and washer...**

**Lubrication.** — Petrolatum or petroleum jelly should be applied to cam and gears of record posts. Apply heavy gear grease, such as "Texaco Crater No. 2" or equivalent to main gear and spindle pinion gear.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

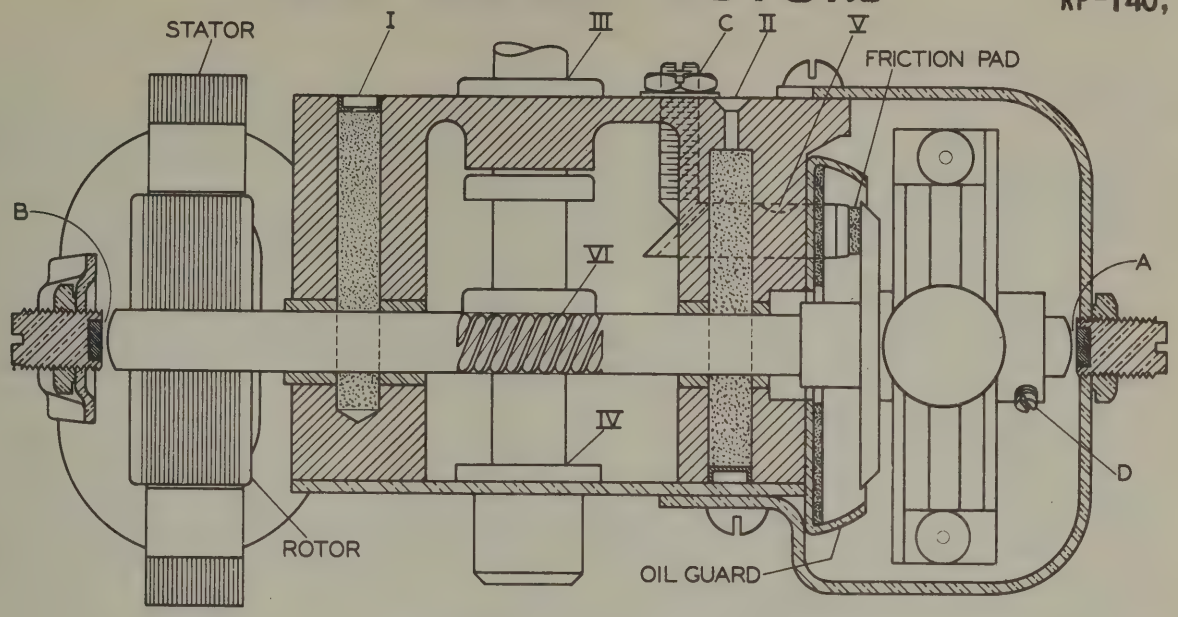
The felt washer between the turntable and spindle bearing should be soaked in light engine oil whenever the turntable is removed, or as required for proper operation. The turntable spindle bearing of RP-145 must be lubricated from the top of the motorboard. Using an oil can with a long spout, reach in between the turntable and motorboard and apply oil directly to the spindle.

On Model RP-139-A apply a few drops of light machine oil (S.A.E.-10) to the motor oil hole adjacent to the spindle bearing after each 1,000 hours of operation. The oil hole has a screw plug.

Do not allow oil or grease to come in contact with rubber mounting of tone arm base, rubber bumper, rubber spindle cap, or rubber parts of friction drive mechanism of Model RP-145.

The RP-145 turntable is not removable from the spindle. However, the rubber tired driving disc is fastened to the spindle by means of a tapered pin "24." If necessary to remove these parts the tapered pin should first be removed. The driving disc can then be removed from the spindle and the turntable and spindle assembly lifted upward from the motorboard. If this is done, great care should be taken not to bend the spindle. At the same time the spindle bearing should be oiled and the cup and ball thrust bearing oiled and checked for proper position. The RP-145 drive motor bearing is lubricated from an oil well filled and sealed at the factory. It should not require lubrication in the field.

# GOVERNOR MOTORS




## Lubrication and Adjustment

(1) Remove motor end brackets, bottom cover containing lower spindle bearing, and governor. Slide vertical spindle downward, remove C-washer; then push upward to disengage worm gear. Slide rotor and shaft from motor.

(2) Clean rotor bearings and rotor shaft thoroughly with "Carbona" or "benzine." Flush oil reservoirs I and II with the same solvent, preferably after removing oil wicks.

(3) Remove governor felt friction pad V. Replace this pad with revised type Stock No. 34058, being certain to saturate thoroughly with oil.

(4) Put slight amount of oil in each rotor bearing, and reinsert rotor shaft. See that shaft revolves freely when in position.

(5) Oil bearing IV, grease gear VI, and re-install bottom cover; checking to assure that vertical spindle revolves freely and worm is properly meshed after cover is in place and screws tightened. Do not misplace small disc of bottom thrust bearing.

(6) Inspect governor to see that springs move freely under retaining washers, and that governor is otherwise in good condition. Install on rotor shaft, checking for possible bind of sleeve on the shaft.

(7) Replace end brackets containing thrust screws "A" and "B"

(8) Adjust thrust screw "A" so that **one** steel lamination of rotor shows beyond the stator laminations as illustrated. This positions rotor at the electrical center of the stator, for maximum torque.

(9) Adjust thrust screw "B" to provide 1/16 inch clearance from end of rotor shaft.

(10) Fill both wells I and II with oil. At least 30-50 drops are required. Also oil bearing III.

(11) Position governor so that when it is fully contracted (closed), the friction disc is aligned with outer edge of oil guard. Tighten set screw "D".

(12) Connect motor to source of power, and adjust screw "C" to give 78 R.P.M. After allowing motor to run a short time, to compress felt pad. It may be necessary to recheck position of governor to give sufficient range of speed adjustment.

(13) Test motor, after allowing it to reach operating temperature, by grasping spindle and noting relative amount of force required to cause governor to contract. Also stall motor, and release, to see that governor has "snappy" response.

## Governor Waver — Causes

Drifting of motor speed at a slow rate, or erratic shift to other than normal speed, is generally caused by (1) binding of rotor or spindle bearings due to lack of lubrication, (2) scored shafts or bearings, (3) binding due to tight adjustment of thrust bearing "B", (4) binding of turntable spindle bearing on motor board (where used), (5) improper centering of motor with respect to turntable spindle.

## Special Notes

(1) Do not interchange parts of different motors, especially bearings, shafts, or gears.

(2) Where a new rotor or turntable spindle is installed, allow motor to run-in for eight hours; preferably under load.

(3) The motor should not be tested or used at temperatures below 65 degrees Fahrenheit.

(4) Where thrust bearing screw "A" is badly worn or does not have a fibre insert, replace with RCA Stock No. 31616.

(5) Governor motors should be thoroughly lubricated after approximately 300-500 hours of operation. This is equivalent to 1-2 years usage in the average home.

## Governor Chatter — Causes

When the governor rattles or flutters rapidly, accompanied by excessive mechanical noise, the likely source of trouble is (1) glazed felt friction pad due to lack of lubrication, (2) rotor not centrally positioned in stator, (3) thrust bearing "A" worn, (4) mis-aligned or rough governor disc.

## Lubricant Specifications

Only **mineral** base oils and greases should be used.

(1) For points requiring oil, use a type having a high viscosity index (with a viscosity rating of SAE 20-30), such as "Esso Motor Oil, Uniflo No. 3."

(2) For points requiring grease, a light gear grease having good clinging properties, such as "Cities Service No. 7035-A1" or "Koolmotor Universal Trojan No. 1", should be used.

# VICTROLA MECHANISM NOTES

## IDENTIFICATION OF GOVERNORS

### In Phono Motors:

The following governors are similar with exception of the weight and spring assemblies. The rings mentioned are two grooves cut in the flyball for identification purposes

| Stock No. | Identification |
|---|---|
| 11703 | Weight has two rings and uses spring .156 in. wide X .0076 in. thick. Balls measure 9/32 in. X 5/8 in. D. |
| 31623 | Weight has two rings and uses spring .156 in. wide X .0066 in. thick. Balls measure 9/32 in. X 5/8 in. D. |
| 31624 | Weight is plain and uses spring .156 in. wide X .0066 in. thick. Balls measure 5/16 in. X 5/8 in. D. |
| 32034 | Weight is plain and uses spring .187 in. wide X .0082 in. thick. Balls measure 5/16 in. X 5/8 in. D. |

## PHONOGRAPH MOTORS

### Identifying Colors:

In order to facilitate identification in respect to frequency, Phonograph motors are marked either on the bottom or side with a large spot of paint as follows:

60 cycles..... no mark
50 cycles.....green
25 cycles.....white

## REPLACEMENT PHONO MOTOR NO. 38567

### Installation Instructions:

No. 38567 motor is 60-cycle replacement for Stock No. 31157 and No. 31163 used in Models U-125, U-126, U-128, U-130, U-132, U-134, etc.

Parts Required

1—RCA No. 38567 Constant Speed Motor 105-125 V.—60 cycles
1—RCA No. 38568 Thrust Bearing Assembly .....
1—RCA No. 38569 Motor Support Plate .....

INSTALLATION

(a) Remove original motor and support plate assembly from instrument.
(b) Drive out TAPERED COUPLING PIN and lift turntable and spindle assembly from mechanism.
(c) Install Stock No. 38568 Thrust Bearing assembly; consisting of two ground steel washers, one felt washer and ball bearing, as illustrated. Apply slight amount clean oil to this assembly.
(d) Attach coupling to spindle with TAPERED PIN.
(e) Mount motor and support plate, being certain to precisely align turntable spindle and motor shaft. Improper alignment will produce "Wow."
(f) Mesh the flexible coupling as illustrated—same as original arrangement. If rubber strips are worn or deteriorated, replace them using RCA Stock No. 31147.
(g) Connect leads same as for original motor.

GENERAL

(a) Motor No. 38567 is a shaded pole-induction type similar to that used on RP-139 record changers. Speed is non-adjustable. Speed tolerance for extreme voltage and load conditions: 77-81 RPM. Replacements: — FIELD COIL — No. 32954; Spindle and gear—No. 38597.
(b) Remove lower steel washer from thrust bearing assembly if turntable tends to be too high, or DRIVE GEAR does not mesh properly.
(c) If mechanical hum is experienced, check flexible mounting of support plate; loosen if necessary. Cushion-mount motor if adjustment of the plate is ineffective.

### Gear Noise in Automatic Record Changers, Models U-40, U-42, U-46, etc.:

A small amount of heavy fibrous gear grease, such as "Texaco Crater Compound No. 2," applied to the spindle pinion and main gear teeth, will satisfactorily reduce mechanical gear noise produced at this point. Care should be exercised to avoid getting this grease near or into the spindle bearing. It is best to apply grease while gear is in motion.

A recently developed fibre main gear is being used on later production mechanisms. This type of gear serves to prevent noise. It will be supplied on all future replacement orders for Stock No. 33987.

### Turntable Spindle Bearing:

Replacement spindle bearings for automatic record changer motor-boards are available as follows:

Stock No.

35846 Bearing—Spindle bearing for Models U-125, U-25, U-126, U-26, U-128, U-129, U-130, U-30, U-132, U-134, 11QU, 12QU, and U-46..
35847 Bearing—Spindle bearing for record changer RP-145 used in Models U-40, U-42, U-43 and VA-22....

These bearings may be readily substituted for an original faulty bearing:

(a) Remove motor and turntable assembly from motor-board.
(b) Invert motor-board on a vise, supporting it solidly as close to the bearing as possible.
(c) Strike the end (bottom) of the bearing a smart heavy blow with a hammer to drive it from the board.
(d) Insert new bearing, resting its top flat surface against a rigid metal plate, and stake over its mounting collar with a screwdriver or chisel. Be sure bearing is exactly perpendicular to surface of board.

### Leather Lid Seal:

The leather lid welt or beading used around the top edges of Victrola playing compartments can be obtained by ordering Stock No. 35578. This covers a 6-foot length.

### Revised Friction Pad:

Use of the revised felt friction pad Stock No. 34058, referred to in the Service Data on governor motors is vital in effectively servicing these motors. The two types of pads are illustrated below:

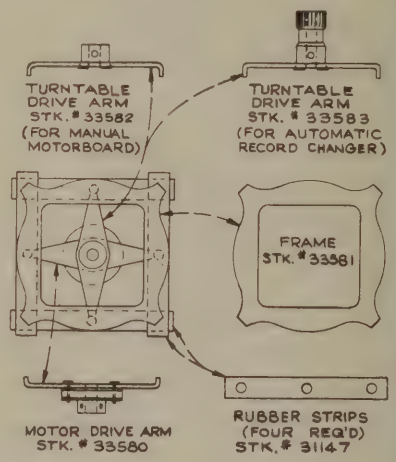
As may be readily seen, the oil capacity has been materially increased, and capillary "feed" improved.

### Flexible Couplings:

Stock No. 31146 coupling for automatic record changer and Stock No. 31536 coupling for manual motorboards, have been superseded by following component parts:

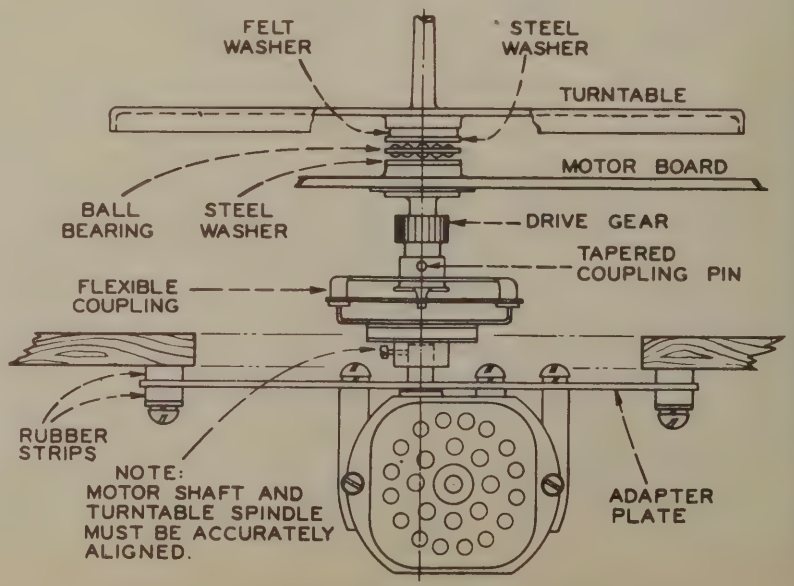
Stock No.

14188 Set screw.....
31147 4 Rubber strips.....
33580 Drive arm, rubber disc, and hub for motor shaft—less set screws.....
33581 Flexible coupling metal frame and support .....
33582 Drive arm and hub for turntable shaft —for manual motorboards only...
33589 Drive arm, hub, and drive gear for turntable shaft—for automatic record changers only.....


TURNTABLE DRIVE ARM STK.# 33582 (FOR MANUAL MOTORBOARD)
TURNTABLE DRIVE ARM STK.# 33583 (FOR AUTOMATIC RECORD CHANGER)
FRAME STK.# 33581
MOTOR DRIVE ARM STK.# 33580
RUBBER STRIPS (FOUR REQ'D) STK.# 31147

*Flexible Coupling Parts.*

*Revised Felt Friction Pad Stock No. 34058 for Governor Motors.*




*Method of Installing Replacement Phono Motor No. 38567*

RP-132, RP-139, RP-140, RP145

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEM. RP-132 SERIES** |
| 31617 | Bracket—Governor end bearing bracket |
| 31626 | Coil—Field coil and laminations for 25 cycle motor |
| 31619 | Coil—Field coil and laminations for 50-60 cycle motor |
| 31618 | Coil—Field coil and laminations for 60 cycle motor |
| 31624 | Governor—Motor governor for 25-cycle motor |
| 11703 | Governor—Motor governor for 50-60 cycle motor |
| 31623 | Governor—Motor governor for 60-cycle motor |
| 31448 | Motor—105-125 volts, 25 cycle (M1) |
| 31163 | Motor—105-125 volts, 50-60 cycles (M1) |
| 31157 | Motor—105-125 volts, 60 cycles (M1) |
| 30870 | Plug—2-contact male plug for motor power cable |
| 31447 | Screw—Complete set of motor mounting screws, washers, and spacers—for 25 cycle models only |
| 31158 | Screw—Complete set of motor mounting screws, washers, and spacers—for 50-60 cycle models only |
| 31616 | Screw—Rotor bearing thrust screw |
| 31620 | Screw—Speed regulator screw with nut |
| 31636 | Spindle—Spindle and gear for 25 cycle motor |
| 31634 | Spindle—Spindle and gear for 50-60 cycle and 60 cycle motors |
| 32913 | Spring—Governor spring and ball for 25 cycle motor |
| 32914 | Spring—Governor spring and ball for 50-60 cycle motor |
| 32912 | Spring—Governor spring and ball for 60 cycle motor |
| 14206 | Switch—Motor toggle switch (S7) |
| 31622 | Washer—Metal and felt washers for lower spindle bearing |
| | **MOTOR ASSEMBLIES** Model 11QU 12QU Only |
| 11703 | Governor—Motor speed governor |
| 31876 | Motor—105-125 volts, 50-60 cycles (M100) |
| 30870 | Plug—2-contact male plug for motor power cable |
| 31877 | Pointer—Motor speed regulator pointer and arm |
| 31158 | Screw—Complete set of motor mounting screws, washers, and spacers |
| 14206 | Switch—Motor toggle switch (S100) |
| | **MOTORBOARD ASSEMBLIES** |
| 31149 | Base—Tone arm mounting base |
| 32927 | Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts<br>Model U-25 U-26 U-30 |
| 31152 | Board—Record changer base complete with all welded and riveted posts and bearings—less all operating parts<br>Model U-125 U-128 U-129 U-130 U-132 U-134 |
| 14209 | Bumper—Main lever rubber bumper (1) |
| 9848 | Cup—Used needle cup, rest, and lid complete |
| 32877 | Escutcheon—Index escutcheon<br>Model 11QU 12Q-U U-25 U-26 U-30 |
| 31148 | Escutcheon—Index escutcheon<br>Model U-125 U-128 U-129 U-130 U-132 U-134 |
| 31873 | Escutcheon—Speed regulator escutcheon<br>Model 11QU 12QU Only |
| 31151 | Guide—Pickup lift cable guide (coil spring, 80T 2-in. large) (2) |
| 31150 | Mounting—Pickup arm base rubber mounting complete |
| 31155 | Spring—Needle cup lid tension spring |
| | **OPERATING MECHANISM** |
| 31134 | Bracket—Pickup locating lever mounting bracket (3) |
| * 31144 | Cam—Cam and gear assembly (4) |
| 6808 | Clutch—Trip lever friction clutch assembly (5) |
| 31146 | Coupling—Motor coupling complete with turntable drive gear, rubber strips, motor coupling, and drive arm (6) |
| 31129 | Cover—Cap for top of record post |
| 31116 | Finger—Trip lever friction finger assembly (7) |
| 31119 | Gear—Long arm and rack gear for front left-hand record post (8) |
| 31120 | Gear—Short arm and rack gear for rear right-hand record post (9) |
| 31121 | Gear—Record post gear (10) |
| 31123 | Guide—Main lever spring guide (11) |
| 31114 | Lever—Index lever assembly (12) |
| 31137 | Lever—Index lever tension spring lever (13) |
| 31138 | Lever—Locating lever and pawl assembly (14) |
| 31113 | Lever—Main lever assembly (15) |
| 31140 | Lever—Pickup lift cable lever and spring assembly (16) |
| 31135 | Lever—Pickup locating lever assembly (17) |
| 31130 | Lever—Record separator elevating lever complete with adjustment screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 31115 | Lever—Trip lever assembly (20) |
| 31131 | Lever—Trip regulator lever (21) |
| 31133 | Pawl—Trip pawl assembly (22) |
| 31124 | Pin—Record post drive pin (23) |
| 14207 | Roller—Pickup lift cable roller and bracket assembly (24) |
| 31118 | Screw—Cone pointed set screw for trip lever hub or record post shelf |
| 4563 | Screw—Pickup lift cable screw and nuts |
| 14195 | Screw—Set screw for flexible coupling |
| 31117 | Screw—Special screw to adjust friction clutch tension |
| 31126 | Separator—Record separator knife (25) |
| 31122 | Shaft—Record separator post shaft (26) |
| 31125 | Shelf—Record post shelf assembly (27) |
| 31141 | Spindle—Turntable spindle shaft |
| 3676 | Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 43/64-in. lg.) |
| 14190 | Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.) |
| * 31145 | Spring—Main lever tension spring (29) (18 turns, 9/16-in. O.D., 3-in. lg.) |
| 31136 | Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.) |
| 3666 | Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.) |
| 31127 | Spring—Record separator pressure spring (32) (8 turns, ¼-in. O.D., ¾-in. lg.) |
| 14191 | Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., ¾-in. lg.) |
| 31875 | Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.) |
| 32436 | Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. lg.) |
| 31142 | Spring—Turntable spindle spring |
| 31147 | Strip—Complete set of rubber strips for flexible coupling |
| * 31139 | Turntable Assembly—less spindle |
| 31128 | Washers—"C" washer for top of record post |
| 31143 | Washers—Turntable thrust washers (1 steel, 1 bronze 1 felt) |
| | **U-25, U-26, U-30** |
| 32878 | Cam—Cam and gear assembly (4) |
| | **U-25, U-26, U-30, U-129** |
| 32882 | Spring—Main lever tension spring (29) (18 turns, .6-in. O.D., 3-in. lg.) |
| | **11QU and 12QU** |
| 31874 | Turntable Assembly—less spindle |
| | **PICKUP AND ARM ASSEMBLIES** |
| * 31159 | Arm—Pickup arm complete—less crystal cartridge, needle screw, and cable |
| 32635 | Cable—Pickup arm lift cable and clips |
| 32556 | Cable—Output cable and plug |
| * 31156 | Crystal—Pickup crystal cartridge and needle screw |
| 33114 | Damper—Viscoloid damper for crystal armature |
| 31160 | Screw—Pickup needle screw |
| 31161 | Shaft—Pickup pivot arm and shaft assembly |
| 33096 | Arm—Pickup arm, less crystal and cable<br>**U-25, U-26, U-30, U-129 2nd Prod.** |
| 32632 | Crystal—Pickup crystal cartridge and needle screw<br>Models U-132 and U-134 Only |

***NOT USED ON ALL TYPES**
**SEE SEPARATE LISTING**

**NOTE: RP-140 REPLACEMENT PARTS REFER TO MODEL U-46 PAGE 498C**

# Replacement Parts RP-139, RP-145 SERIES

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **MOTOR ASSEMBLIES (Model RP-139A)** |
| 32956 | Coil—Field coil and laminations for 25 cycle motor |
| 32955 | Coil—Field coil and laminations for 50 cycle motor |
| 32954 | Coil—Field coil and laminations for 60 cycle motor |
| 32960 | Gear—Motor spindle gear and pin |
| 32873 | Motor—Motor complete, 25 cycle, 110 volt AC |
| 32872 | Motor—Motor complete, 50 cycle, 110 volt AC |
| 32871 | Motor—Motor complete, 60 cycle, 110 volt AC |
| 30870 | Plug—2-prong male plug—used on motor leads |
| 32959 | Spindle—Turntable spindle complete with metal pinion and fibre gear for 25 cycle motor |
| 32958 | Spindle—Turntable spindle complete with metal pinion and fibre gear for 50 cycle motor |
| 32957 | Spindle—Turntable spindle complete with metal pinion and fibre gear for 60 cycle motor |
| 32875 | Switch—Motor control switch (4) |
| | **MOTOR ASSEMBLIES (Model RP-145)** |
| 36607 | Armature—Complete motor armature and shaft for 50 cycle motor |
| 34513 | Armature—Complete armature and shaft for 60 cycle motor |
| 34512 | Cap—Bakelite cap for motor |
| 34365 | Capacitor—1.25 mfd., for 60 cycle and 50 cycle motor (38) |
| 36114 | Motor—105-125 volts, 50 cycle motor complete with capacitor (37) |
| 34364 | Motor—105-125 volts, 60 cycle complete with capacitor (37) |
| | **MOTORBOARD ASSEMBLIES** |
| | **QU-5 and QU-51C** |
| 33998 | Base—Pickup arm mounting base |
| 35847 | Bearing—Turntable bearing (36) |
| 36112 | Board—Motorboard complete with bearings and post—less operating mechanism |
| 33999 | Cup—Used needle cup, lid, and pickup arm rest (6) |
| 33997 | Escutcheon—Index escutcheon |
| 31150 | Mounting—Pickup arm base rubber mounting complete |
| 31155 | Spring—Used needle cup lid spring |
| | **MOTORBOARD ASSEMBLIES** |
| | **VA-22 (1st Prod.) and U-123** |
| 31149 | Base—Tone arm mounting base |
| 32876 | Board—Motorboard complete with all riveted and welded posts and brackets — less operating mechanisms |
| 14209 | Bumper—Main lever rubber bumper (1) |
| 9848 | Cup—Used needle cup, rest, and lid complete |
| 32877 | Escutcheon—Index escutcheon |
| 31151 | Guide—Pickup lift cable guide (coil spring, 80T 2-in. large) (2) |
| 31150 | Mounting—Pickup arm base rubber mounting complete |
| 31155 | Spring—Needle cup lid tension spring |
| | **MOTORBOARD ASSEMBLIES (Model RP-139A)** |
| 33981 | Base—Pickup arm mounting base |
| 33978 | Board—Motorboard complete with bearings and posts less operating mechanism |
| 33909 | Cup—Used needle cup, lid, and pickup arm rest (6) |
| 33979 | Escutcheon—Index escutcheon |
| 31150 | Mounting—Pickup arm base rubber mounting complete |
| 31155 | Spring—Used needle cup lid spring (49) |
| | **MOTORBOARD ASSEMBLIES (Model RP-145)** |
| 33981 | Base—Pickup arm mounting base |
| 34363 | Board—Motorboard complete with bearings and posts—less operating mechanisms |
| 33909 | Cup—Used cup, lid, and pickup arm rest (6) |
| 33979 | Escutcheon—Index escutcheon |
| 31150 | Mounting—Pickup arm base rubber mounting complete |
| 31155 | Spring—Used needle cup lid spring (49) |
| 32875 | Switch—Motor switch (4) |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MODEL VA-22 2nd Production:** |
| | The 2nd production of Model VA-22 uses mechanism similar to RP-139A and RP-145. For replacement parts, refer to the Service Data on RP-139A and RP-145 as specified below: |
| | Stock No. |
| | **PICKUP AND ARM ASSEMBLIES** |
| | Same as RP-145, except add: |
| 33905 | Crystal—Pickup crystal cartridge and needle screw for 25-cycle only |
| | **OPERATING MECHANISM, MOTOR ASSEMBLIES, MOTORBOARD ASSEMBLIES** |
| | For 110-volt, 60-cycles, same as RP-145. |
| | For 110-volt, 25-cycles, same as RP-139A. |
| | **QU-5 and QU-51C** |
| | **OPERATING MECHANISM** |
| 10129 | Ball—Steel ball for turntable bearing |
| 33984 | Bracket—Record discriminating lever mounting bracket (3) |
| 32556 | Cable—Pickup arm shielded cable (8) |
| 33987 | Cam—Cam and drive gear (42) |
| 6808 | Clutch—Trip lever clutch (5) |
| 34369 | Cup—Turntable bearing cup (36) |
| 34367 | Disc—Turntable drive disc and tire (39) |
| 31116 | Finger—Trip lever friction finger (7) |
| 32879 | Gear—Long arm and rack gear (41) |
| 32880 | Gear—Short arm and rack gear (40) |
| 31121 | Gear—Record separator shaft gear (10) |
| 34368 | Grommet—Rubber grommet for motor mounting (48) |
| 31151 | Guide—Lift cable guide spring (2) |
| 33982 | Guide—Main spring guide (11) |
| 34370 | Idler—Turntable idler wheel and arm (39) |
| 34000 | Lever—Index lever (12) |
| 31138 | Lever—Locating lever and pawl (14) |
| 33985 | Lever—Main lever (15) |
| 34007 | Lever—Mercury switch actuating lever (51) |
| 34002 | Lever—10 inch and 12 inch record discriminating lever (17) |
| 31140 | Lever—Pickup lift cable lever and spring (16) |
| 31130 | Lever—Record separator elevating lever with adjustment screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 36115 | Lever—Trip lever and cam complete (20) |
| 31131 | Lever—Trip regulator lever (21) |
| 34086 | Link—Index lever setting link and button |
| 34004 | Link—Roller index link |
| 31137 | Pawl—Index lever pawl (13) |
| 31133 | Pawl—Trip pawl assembly (22) |
| 31535 | Pin—Drive pin for turntable drive disc (24) |
| 31124 | Pin—Pin to fasten gear on record separator shaft (23) |
| 31118 | Screw—Cone pointed set screw for record separator shelf ("H" and "D") |
| 33983 | Screw—Record separator elevating lever pivot screw |
| 31117 | Screw—Special to adjust friction clutch ("B") |
| 34001 | Screw—Record separator elevating lever ball point screw (G) |
| 33990 | Separator—Record separator knife (25) |
| 33988 | Shaft—Record separator shaft (34) |
| 33989 | Shelf—Record separator shelf (27) |
| 3676 | Spring—Cam gear pawl spring |
| 31136 | Spring—Index lever pawl spring (30) |
| 3666 | Spring—Lift cable spring (31) |
| 32436 | Spring—Locating lever spring (35) |
| 32882 | Spring—Main lever tension spring (43) |
| 34876 | Spring—Pickup arm starting spring (26) |
| 14190 | Spring—Record discriminating lever pawl spring or locating lever pawl spring (28) |
| 33994 | Spring—Record discriminating lever spring (flat) (9) |
| 14191 | Spring—Trip detaining lever spring (33) |
| 34372 | Spring—Turntable idler wheel spring (47) |
| 34371 | Support—Turntable drive and motor support ("N") |
| 32866 | Switch—Mercury tube with leads (50) (S7) |
| 34875 | Switch—Pickup shorting switch (44) |
| 36113 | Turntable—Turntable and spindle shaft (32) |
| 34373 | Washer—"C" washer for mounting idler wheel and arm |
| | **VA-22 and U-123** |
| | **OPERATING MECHANISM** |
| 31134 | Bracket — Pickup locating lever mounting bracket (3) |
| 32878 | Cam—Cam and drive gear (42) |
| 6808 | Clutch—Trip lever friction clutch assembly (5) |
| 31129 | Cover—Cap for top of record post |

## Replacement Parts (Continued) RP-139, RP-145

| STOCK No. | DESCRIPTION |
|---|---|
| 32883 | Damper—Motor spindle rubber drive sleeve and metal damper plate |
| 31116 | Finger—Trip lever friction finger assembly (7) |
| 32879 | Gear—Rack gear for front left-hand record post (41) |
| 32880 | Gear—Rack gear for rear right-hand record post (40) |
| 31121 | Gear—Record post gear (10) |
| 31123 | Guide—Main lever spring guide (11) |
| 31114 | Lever—Index lever assembly (12) |
| 31137 | Lever—Index lever tension spring lever (13) |
| 31138 | Lever—Locating lever and pawl assembly (14) |
| 31113 | Lever—Main lever assembly (15) |
| 31140 | Lever—Pickup lift cable lever and spring assembly (16) |
| 31135 | Lever—Pickup locating lever assembly (17) |
| 31130 | Lever—Record separator elevating lever complete with adjustment screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 31115 | Lever—Trip lever assembly (20) |
| 31131 | Lever—Trip regulator lever (21) |
| 31133 | Pawl—Trip pawl assembly (22) |
| 31124 | Pin—Record post drive pin (23) |
| 14207 | Roller—Pickup lift cable roller and bracket assembly (24) |
| 31118 | Screw—Cone pointed set screw for trip lever hub or record post shelf |
| 4563 | Screw—Pickup lift cable screw and nuts |
| 31117 | Screw—Special screw to adjust friction clutch tension (B) |
| 31126 | Separator—Record separator knife (25) |
| 31122 | Shaft—Record separator post shaft (26) |
| 31125 | Shelf—Record post shelf assembly (27) |
| 3676 | Spring—Cam pawl tension spring on main gear (12 turns, .190-in. O.D., 4-3/64-in. lg.) |
| 32882 | Spring—Main lever tension spring (43) (18 turns, .6-in. O.D., 3-in. lg.) |
| 14190 | Spring—Pickup locating lever short spring or locating lever pawl tension spring (28) (16 turns, .180-in. O.D., 19/32-in. lg.) |
| 31136 | Spring—Index lever tension spring (30) (25 turns, .190-in. O.D., 15/16-in. lg.) |
| 3666 | Spring—Pickup lift cable tension spring (31) (20 turns, .195-in. O.D., 1-in. lg.) |
| 31127 | Spring—Record separator pressure spring (32) (8 turns, 5/8-in. O.D., 3/4-in. lg.) |
| 14191 | Spring—Trip detaining lever tension spring (33) (15 turns, .190-in. O.D., 3/4-in. lg.) |
| 31875 | Spring—Pickup locating lever tension spring (34) (14 turns, .220-in. O.D., 27/32-in. lg.) |
| 32436 | Spring—Locating lever tension spring (35) (16 turns, .182-in. O.D., 21/32-in. lg.) |
| 32881 | Turntable complete |
| 31128 | Washer—"C" washer for top of record post |

### RP-139A and RP-145

#### OPERATING MECHANISM

| | |
|---|---|
| 10129 | Ball—Steel ball for turntable bearing (Model RP-145) |
| 33984 | Bracket—Record discriminating lever mounting bracket (3) |
| 33987 | Cam—Cam and drive gear (42) |
| 6808 | Clutch—Trip lever clutch (5) |
| 34369 | Cup—Turntable bearing cup (Model RP-145) (36) |
| 32883 | Damper—Rubber drive sleeve and damper plate for motor spindle (Model RP-139A) (45, 46) |
| 34367 | Disc—Turntable drive disc and tire (Model RP-145) (29) |
| 31116 | Finger—Trip lever friction finger (7) |
| 32879 | Gear—Long arm and rack gear (41) |
| 31121 | Gear—Record separator shaft gear (10) |
| 32880 | Gear—Short arm and rack gear (40) |
| 34368 | Grommet—Rubber grommet for motor mounting (Model RP-145) (48) |
| 31151 | Guide—Lift cable guide spring (2) |
| 33982 | Guide—Main spring guide (11) |
| 34370 | Idler—Turntable idler wheel and arm (Model RP-145) (39) |
| 33986 | Lever—Index lever (12) |
| 31138 | Lever—Locating lever and pawl (14) |
| 33985 | Lever—Main lever (15) |
| 33993 | Lever—10-inch and 12-inch record discriminating lever (17) |
| 31140 | Lever—Pickup lift cable lever and spring (16) |
| 31130 | Lever—Record separator elevating lever with adjustment screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 34874 | Lever—Trip lever assembly (20) |
| 31131 | Lever—Trip regulator lever (21) |
| 33992 | Link—Index lever setting link and button |
| 31137 | Pawl—Index lever pawl (13) |
| 31133 | Pawl—Trip pawl assembly (22) |
| 35820 | Pin—Drive pin for turntable drive disc (Model RP-145) (24) |
| 31124 | Pin—Pin to fasten gear on record separator shaft (23) |
| 31118 | Screw—Cone pointed set screw for record separator shelf ("H") |
| 14195 | Screw—No. 10-32 cone pointed set screw for trip lever hub ("D") |
| 33983 | Screw—Record separator elevating lever pivot screw |
| 31117 | Screw—Special to adjust friction clutch |
| 33990 | Separator—Record separator knife (25) |
| 33988 | Shaft—Record separator shaft (34) |
| 33989 | Shelf—Record separator shelf (27) |
| 3676 | Spring—Cam gear pawl spring |
| 31136 | Spring—Index lever pawl spring (30) |
| 3666 | Spring—Lift cable spring (31) |
| 32436 | Spring—Locating lever spring (35) |
| 32882 | Spring—Main lever tension spring (43) |
| 34876 | Spring—Pickup arm starting spring (26) |
| 14190 | Spring—Record discriminating lever pawl spring or locating lever pawl spring (28) |
| 33994 | Spring—Record discriminating lever spring (flat) (9) |
| 14191 | Spring—Trip detaining lever spring (33) |
| 34372 | Spring—Turntable idler wheel spring (Model RP-145) (47) |
| 34371 | Support—Turntable drive and motor support (Model RP-145) |
| 34875 | Switch—Pickup shorting switch (44) |
| 33991 | Turntable—(Model RP-139A) |
| 34366 | Turntable and Spindle Shaft—(Model RP-145) (32) |
| 34373 | Washer—"C" washer for mounting idler wheel and arm (Model RP-145) |
| 34001 | Screw—Ball point screw for record elevating lever |

### QU-5 and QU-51c

#### PICKUP AND ARM ASSEMBLIES

| | |
|---|---|
| 34011 | Arm—Pickup arm shell only |
| 33905 | Crystal—Pickup unit crystal cartridge |
| 35171 | Crystal—Pickup unit crystal cartridge |
| 33529 | Screw—Needle screw |
| 34012 | Shaft—Pickup pivot arm and shaft |

### VA-22 (1st Prod.)

#### PICKUP AND ARM ASSEMBLIES

| | |
|---|---|
| 33096 | Arm—Pickup arm complete—less crystal cartridge, needle screw, and cable |
| 32635 | Cable—Pickup arm lift cable and clips |
| 32885 | Cable—Output cable and plug |
| 31156 | Crystal—Pickup crystal cartridge and needle screw |
| 33114 | Damper—Viscoloid damper for crystal armature |
| 31160 | Screw—Pickup needle screw |
| 31161 | Shaft—Pickup pivot arm and shaft assembly |

#### PICKUP AND ARM ASSEMBLIES
Model U-123 (Single-Band)

| | |
|---|---|
| 31162 | Cable—Pickup arm lift cable and clips |
| 32885 | Cable—Pickup arm output cable |
| 31156 | Crystal—Pickup crystal cartridge and needle screw |
| 32884 | Pickup and arm complete |
| 31160 | Screw—Pickup needle screw |
| 31161 | Shaft—Pickup pivot arm and shaft assembly |

### U-123 (2 Band)

#### PICKUP AND ARM ASSEMBLIES

| | |
|---|---|
| 33096 | Arm—Pickup arm complete—less crystal cartridge, needle screw, and cable |
| 31162 | Cable—Pickup arm lift cable and clips |
| 32885 | Cable—Output cable and plug |
| 31156 | Crystal—Pickup crystal cartridge and needle screw |
| 33114 | Damper—Viscoloid damper for crystal armature |
| 31160 | Screw—Pickup needle screw |
| 31161 | Shaft—Pickup pivot arm and shaft assembly |

### RP-139A and RP-145

#### PICKUP ARM ASSEMBLIES

| | |
|---|---|
| 33906 | Arm—Pickup arm shell |
| 33977 | Cable—Pickup shielded cable (8) |
| 35171 | Crystal—Pickup cartridge and needle screw |
| 33976 | Pin—Used to fasten pivot arm in pickup arm shell |
| 33974 | Screw—Needle screw |
| 33975 | Shaft—Pickup pivot shaft and pivot arm |

# MODEL V-135 & RADIOLA R-566P

**Chassis No. RC-517H** RC-517J

## Five-Tube, Single-Band, A-C, Phonograph-Radio

**RADIOLA R-566P**

SAME AS MODEL V-135

**EXCEPT**

| | |
|---|---|
| 38818 | Dial - Dial Scale |
| 39531 | Mounting - Spring mounting hardware to mount record changer (2 required). |

Cabinet Dimensions (inches)

| Height | Width | Depth |
|---|---|---|
| 10 7/8 | 16 1/2 | 13 5/16 |

## Electrical and Mechanical Specification

Frequency Range ..... 540-1,600 kc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-12SA7 ..... 1st Det.—Oscillator
(2) RCA-12SK7 ..... I.F. Amplifier
(3) RCA-12SQ7 ..... 2nd Det., A.V.C., and A-F Amplifier
(4) RCA-35L6GT ..... Power Output
(5) RCA-50Y6GT ..... Rectifier

POWER OUTPUT

Undistorted ..... 1.6 watts
Maximum ..... 3 watts
Pilot Lamp ..... (1) Mazda No. 51, 6.3 volts, 0.20 amps.

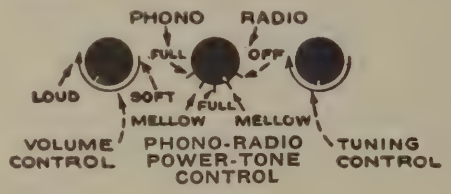
POWER SUPPLY RATING

105-125 Volts, 60 Cycles ..... 65 watts

LOUDSPEAKER (RL86B6)

Type ..... 5-inch Electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) ..... | 12¾ | 16¼ | 17¼ |




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-517-H)** |
| 39500 | Capacitor—Electrolytic—16 mfd., 150 volts |
| 39501 | Capacitor—Electrolytic comprising 1 section of 16 mfd., 150 volts, and 1 section of 50 mfd., 250 volts |
| 39327 | Capacitor—Mica trimmer—2-20 mmfd. |
| 34699 | Capacitor—100 mmfd. |
| 34700 | Capacitor—120 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 12536 | Capacitor—820 mmfd. |
| 37705 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd., 300 volts |
| 4839 | Capacitor—0.1 mfd., 400 volts |
| 38338 | Coil—Oscillator coil |
| 36285 | Condenser—Variable tuning condenser |
| 38409 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 8½-in. overall lgth.) |
| 38337 | Dial—Dial scale |
| 37914 | Indicator—Station selector indicator |
| 37982 | Insulator—Phono input socket insulator |
| 39326 | Loop—Antenna loop complete |
| 36286 | Plate—Dial back plate—less dial |
| 30868 | Plug—2-contact female plug for motor cable |
| 39499 | Resistor—15 ohms, 2 watt—wire wound |
| 14671 | Resistor—33 ohms, ½ watt |
| 30785 | Resistor—150 ohms, 1 watt |
| 39498 | Resistor—330 ohms, 3 watt |
| 6134 | Resistor—1,200 ohms, 1 watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30931 | Resistor—4.7 meg., ½ watt |
| 36290 | Shaft—Tuning knob shaft |
| 36292 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 30585 | Spring—Drive cord spring |
| 39466 | Switch—Phono, tone, and power switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35056 | Transformer—Output transformer |
| 33726 | Washer—Spring washer to retain tuning shaft |
| | **AUTOMATIC RECORD CHANGER** |
| | See separate Service Bulletin RP-162 Record Changer. |
| | **SPEAKER ASSEMBLIES (RL-86-B6)** |
| 32907 | Cap—Dust cap |
| 39520 | Coil—Field coil—750 ohms |
| 39539 | Cone—Cone complete with voice coil |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38341 | Crystal—Dial scale crystal |
| 38342 | Decalcomania—Control panel decal |
| 36386 | Decalcomania—Trade mark decal |
| 13085 | Hinge—Lid hinge |
| 35814 | Knob—Control knob |
| 11765 | Lamp—Dial lamp |
| 39351 | Mounting—Motorboard spring mounting hardware for record changer (2 required) |
| 38873 | Spring—Conical spring to mount motorboard |
| 30900 | Spring—Retaining spring for knobs |
| 39384 | Support—Lid support |

## Alignment Procedure

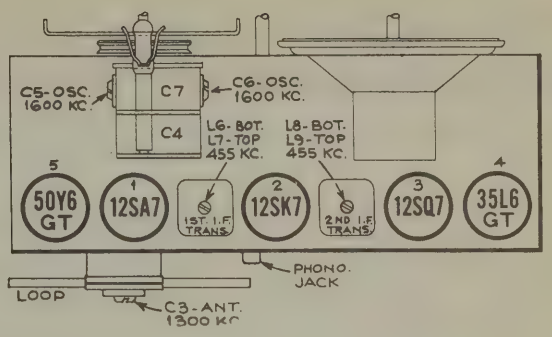
**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

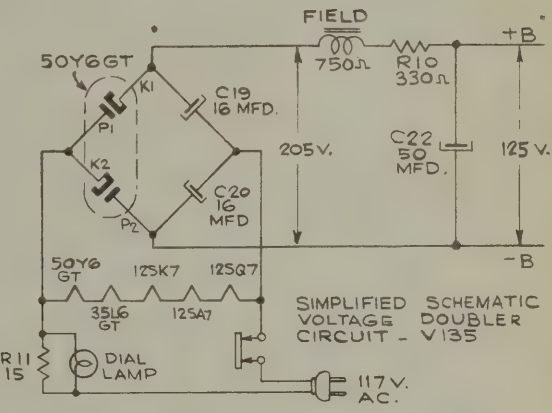
**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

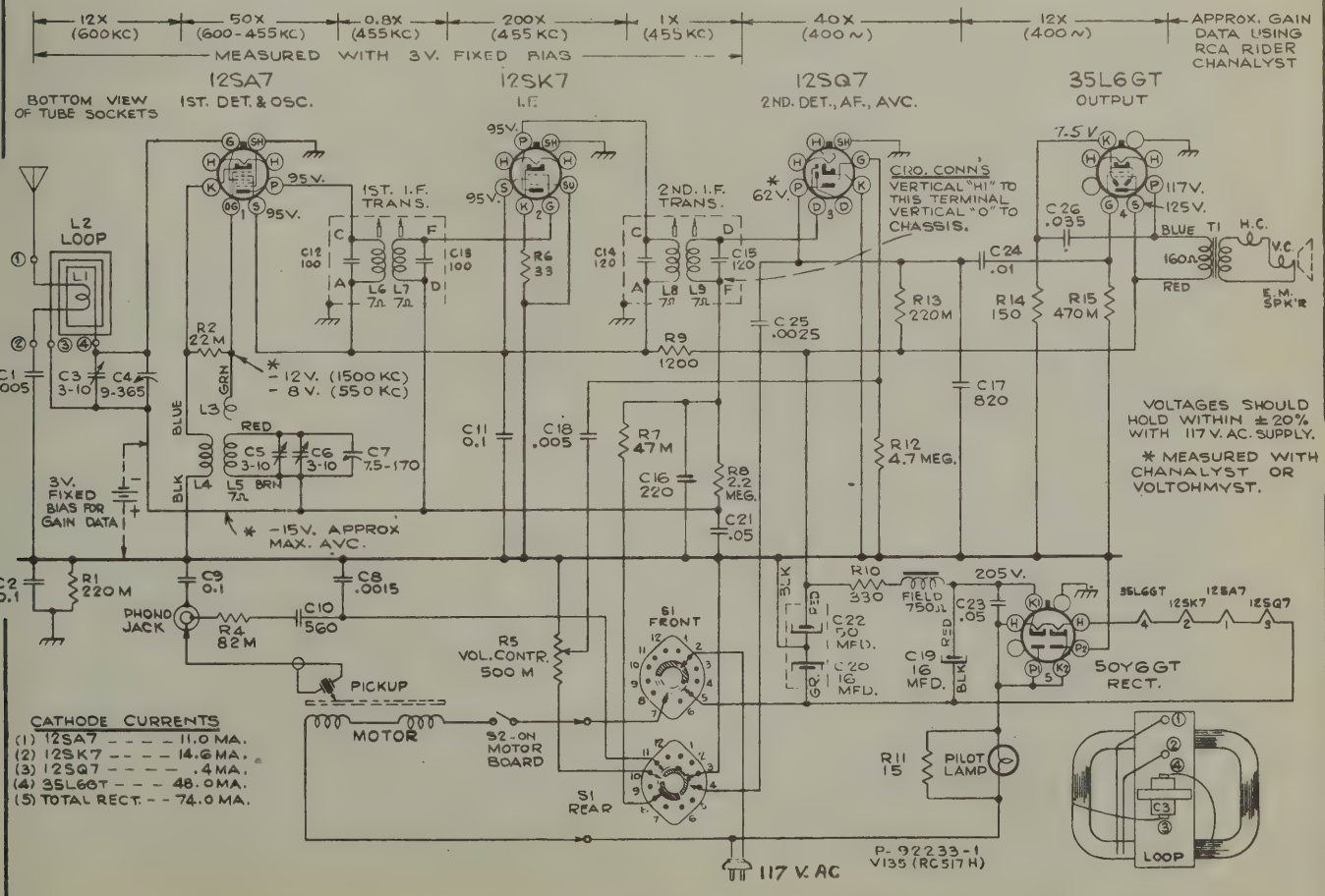
**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the common negative, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet point 1,600 kc end of dial | L8 and L9 2nd I-F transformer |
| 2 | 1st Det. grid in series with .01 mfd. | | | L6 and L7 1st I-F transformer |
| 3 | Ant. terminal in series with 200 mmfd. | 1,600 kc | Gang at minimum | C5 (osc.) C6 (osc.) |
| 4 | Radiated signal 1,300 kc | | Signal Frequency | C3 (ant.) |
| 5 | Repeat steps 3 and 4. | | | |




***Refer to RP-162 Service Note for Data on Automatic Mechanism***

# MODEL V-140

## Chassis No. RC-572A

## Six-Tube, Single-Band, A-C, Superheterodyne Radio & Phonograph

*(Refer to RP-162 Service Note for Data on Automatic Mechanism)*

### Electrical and Mechanical Specifications

Frequency Range ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SK7 ..... R-F Amplifier
(2) RCA-6SA7 ..... 1st Det.—Oscillator
(3) RCA-6SK7 ..... I-F Amplifier
(4) RCA-6SQ7 ..... 2nd Det., A.V.C., and A-F Amplifier
(5) RCA-25L6GT ..... Power Output
(6) RCA-25Z6GT ..... Rectifier

POWER OUTPUT

Undistorted ..... 3.2 watts
Maximum ..... 5.2 watts

POWER SUPPLY RATING

105-125 volts, 60 cycles ..... 85 watts total

LOUDSPEAKER (RL79B-6)

Type ..... 6-inch electrodynamic
V.C. Impedance ..... 3.4 ohms at 400 cycles

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) ..... | 11⅛ | 23⅜ | 17⅛ |

Pilot Lamp ..... (1) Mazda type, No. 47, 6-8 volts, 0.15 amps.
Tuning Drive Ratio ..... 5-1

AUTOMATIC PHONOGRAPH (RP-162)

Type Pickup ..... Crystal
Record Capacity ..... Twelve 10-in. or Ten 12-in. Records

### Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.** — For all alignment operations, connect the low side of the test-oscillator to the common negative, and keep the output as low as possible to avoid a-v-c action.

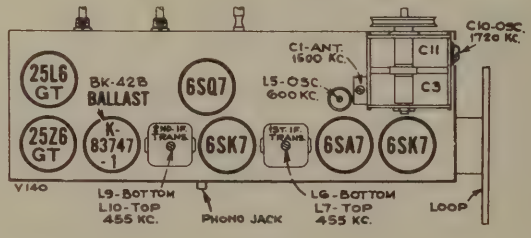
**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

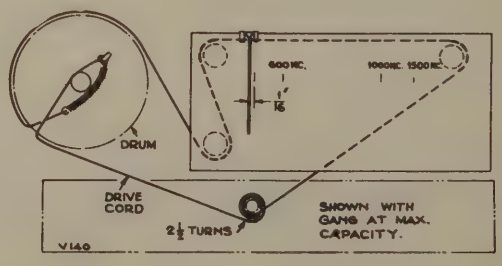
**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the scale printed in this service note can be used as an accurate and convenient substitute for the regular dial. With gang in full mesh, move the dial pointer to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate. Place the dial under the pointer so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the dial in place.

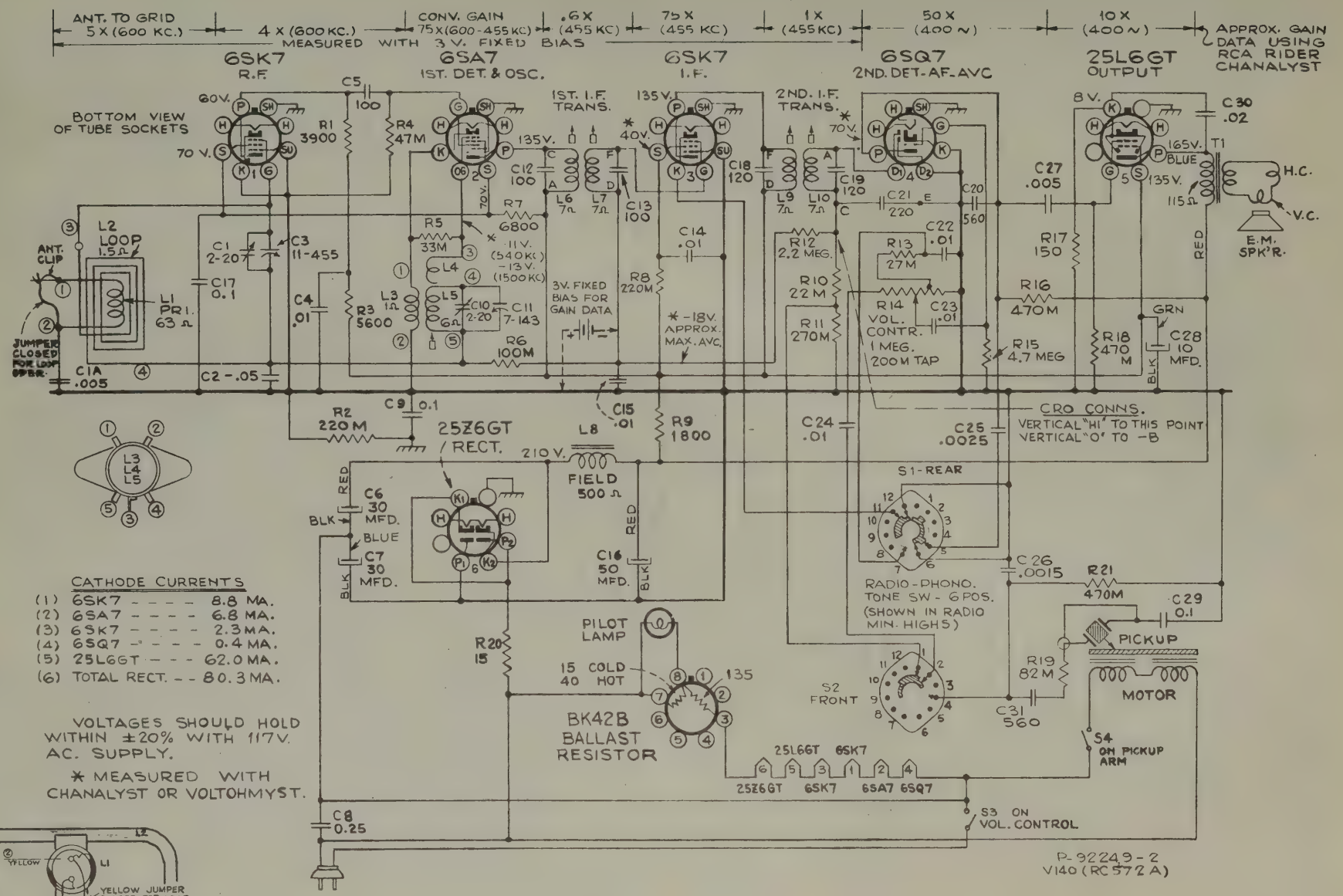
| Steps | Connect the high side of test-oscillator to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for max. peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet point 1,600 kc end of dial | L9 and L10 2nd I-F transformer |
| 2 | 1st Det. grid in series with .01 mfd. | | | L6 and L7 1st I-F transformer |
| 3 | Ant. terminal in series with 200 mmfd. | 1,720 kc | Gang at minimum | C10 (osc.) |
| 4 | Radiated signal 1,500 kc | | Signal Frequency | C1 (ant.) |
| 5 | Radiated signal near 600 kc | | Signal Frequency | L5 (osc.) (Rock gang) |
| 6 | Repeat steps 3, 4 and 5. | | | |

**Critical Lead Dress:**

1. Lead from 6SK7 i-f plate to last i-f transformer to be dressed close to chassis and under all other leads. Prevents i-f beats.
2. 22,000 ohm R-10 i-f to audio isolating resistor to have end connecting to last i-f transformer as short as possible. Prevents i-f beats.
3. First audio grid coupling capacitor C-23 and C-24 to be dressed close to chassis and away from heater wiring. Prevents hum.
4. Dress phono power leads away from phono socket.



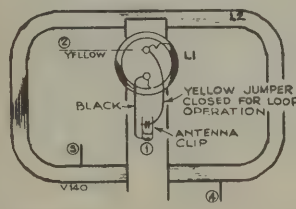



CATHODE CURRENTS

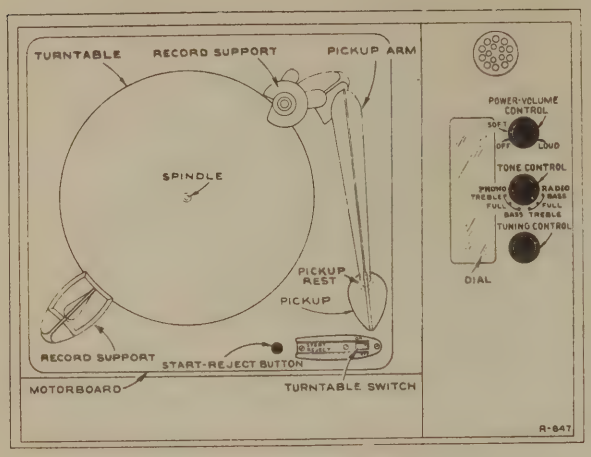
| | | |
|---|---|---|
| (1) | 6SK7 | 8.8 MA. |
| (2) | 6SA7 | 6.8 MA. |
| (3) | 6SK7 | 2.3 MA. |
| (4) | 6SQ7 | 0.4 MA. |
| (5) | 25L6GT | 62.0 MA. |
| (6) | TOTAL RECT. | 80.3 MA. |

VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.




P-9224 9-2
V140 (RC 572 A)




**The Phono-Radio Tone Control.—**

The six positions of the knob are:

1. Fully counterclockwise—radio—mellow tone—with emphasis on lows and reduction of static and high pitched interference.

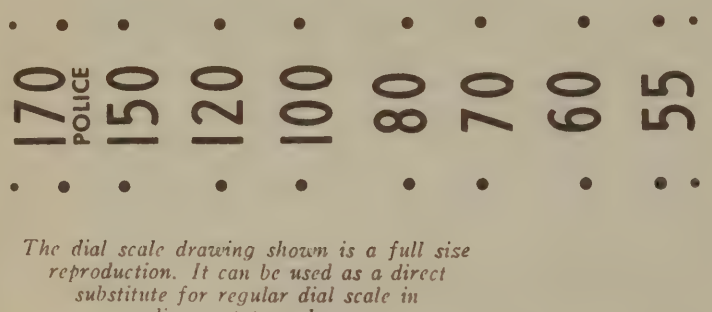
2. Radio—full tone—with all sound effects.

3. Radio—high tone—with reduction of bass resonance and low tones.

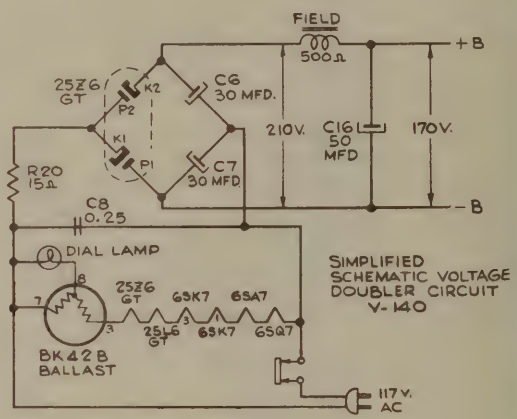
4. Phonograph—mellow tone—with reduction of high pitched surface noise and emphasis on lows.

5. Phonograph—full tone—all sound effects from the record.

6. Phonograph—high tone—with reduction of bass resonance and low tones.




*The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.*

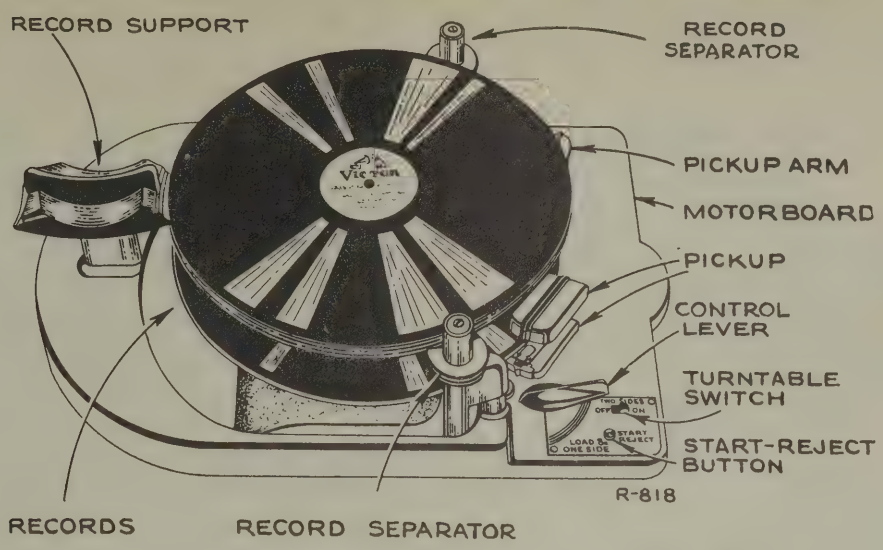



## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-572-A)** |
| 14649 | Ballast—Ballast tube resistor |
| 37846 | Capacitor—Electrolytic—30 mfd., 150 volts |
| 37845 | Capacitor—Electrolytic comprising 1 section of 50 mfd., 250 volts, 1 section of 10 mfd., 250 volts, and 1 section of 30 mfd., 150 volts |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 31813 | Capacitor—120 mmfd. |
| 36616 | Capacitor—220 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 33806 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 4838 | Capacitor—.005 mfd., 1,000 volts |
| 33584 | Capacitor—.005 mfd., 1,200 volts |
| 14393 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 32786 | Capacitor—0.1 mfd., 300 volts |
| 4839 | Capacitor—0.1 mfd., 400 volts |
| 30965 | Capacitor—0.25 mfd. |
| 39491 | Coil—Loop primary coil |
| 39487 | Coil—Oscillator coil |
| 39489 | Condenser—Variable tuning condenser |
| 38408 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 33-in. overall lgth.) |
| 36093 | Core—Adjustable core and stud for oscillator coil |
| 39493 | Indicator—Station selector indicator |
| 37982 | Insulator—Phono socket insulator |
| 39490 | Loop—Antenna loop complete |
| 30868 | Plug—2-contact female plug for motor cable |
| 5119 | Plug—3-contact female plug for speaker cable |
| 36230 | Pulley—Drive cord pulley |
| 14649 | Resistor—Ballast tube resistor |
| 38859 | Resistor—15 ohms, 1 watt |
| 30785 | Resistor—150 ohms, 1 watt |
| 36743 | Resistor—1,800 ohms, 2 watt |
| 30694 | Resistor—3,900 ohms, ½ watt |
| 30734 | Resistor—5,600 ohms, ½ watt |
| 22993 | Resistor—6,800 ohms, 1 watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 30409 | Resistor—27,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 30931 | Resistor—4.7 meg., ½ watt |
| 35862 | Shaft—Tuning knob shaft |
| 31365 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 31261 | Spring—Retaining spring for oscillator coil core and stud |
| 39492 | Switch—Tone switch |
| 35636 | Transformer—First I.F. transformer |
| 36615 | Transformer—Second I.F. transformer |
| 14649 | Tube—Ballast tube resistor |
| 33726 | Washer—"C" washer for tuning knob shaft |
| | **AUTOMATIC RECORD CHANGER** |
| | See separate Service Bulletin RP-162 Record Changer. |
| | **SPEAKER ASSEMBLIES (RL-79B-6)** |
| 31825 | Cap—Dust cap |
| 37850 | Coil—Field coil—500 ohms |
| 39495 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 37844 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38354 | Clamp—Dial clamp |
| 39497 | Decalcomania—Control panel decal |
| 36386 | Decalcomania—Trade mark decal (His Master's Voice) |
| 35467 | Decalcomania—Trade mark decal (RCA Victrola) |
| 39496 | Dial—Glass dial scale |
| 13085 | Hinge—Cabinet lid hinge |
| 35814 | Knob—Control knobs |
| 31480 | Lamp—Dial lamp |
| 39351 | Mounting—Spring mounting hardware for motorboard (2 required) |
| 38873 | Spring—Conical mounting spring for motorboard |
| 30900 | Spring—Retaining spring for knobs |
| 39545 | Support—Lid support |

# Automatic Record Changer RP-151




## Introduction

The RP-151 is an automatic record changer of revolutionary design. It will play a series of fifteen 10-inch or twelve 12-inch records on both sides, or one side, at will. The pickup arm has two light-pressure, sapphire permanent-point, crystal pickups mounted on one arm. One pickup plays the top side of each record; the other pickup plays the bottom side. The turntable rotates in reverse while the bottom side of a record is being played.

The mechanism has two motors. One motor is used solely to rotate the turntable; the cycling motor drives the mechanism during the automatic record-changing cycle.

There are three simple controls.

1. **A Record Support**—Turn it one way to load a stack of 10-inch records, the reverse way to load 12-inch records.

2. **A Control Lever**—Push the lever to load position, then back to the "two-side" position to play both sides of each record; pull it forward to play only the top side of each record.

3. **A "Start-Reject" Button**—Push the button to start the mechanism or to reject a record when the mechanism is operating.

The mechanism uses a **low-noise** crystal pickup. Objectionable "needle chatter" has been removed by utilizing a low mass wire, suitably damped, to hold the sapphire point.

## Service Procedure

**To remove the bottom plate assembly** from the motorboard:

1. Disconnect pickup leads from terminal board.
2. Remove the motor lead plugs from their sockets.
3. Loosen the set screws "C" and lift the tone arm out. Be careful not to lose the two ball bearings at the top and bottom of the tone arm pivot shaft.
4. Remove the four bottom plate mounting screws.

**To remove the tone arm,** turn out the slotted-head bearing through the side of the arm. Then simply lift the arm off. When replacing the arm, do not tighten the bearing enough to cause a bind in vertical motion.

## Lubrication

1. Apply Houghton Stayput at all bearing surfaces.
2. Apply graphite grease at cam and gear surfaces on the main cam and gear, pinion gear (1), and segment gear, pivot and cam surfaces on the slide, and the spring pin on the counterweight.
3. Apply Lubriplate No. 110 at all other points.

## Cautions

1. Do not oil the tone arm pivot shaft.
2. Never use force to start or stop the motor or any part of the record-changing mechanism or pickup arm.
3. Warped or damaged records may cause the mechanism to jam.
4. Do not leave records on the record-holder posts as they may warp, particularly in warm climates. Warped records may be flattened by placing them on a flat surface with a flat heavy article placed on top of them for a few days.
5. If for any reason the phonograph stalls, turn off the turntable switch and remove the records from the record holder shelves. Start the turntable and allow the pickup arm to complete its cycle.
6. **Packing material and special shipping brackets should be given to the customer at the time of installation. Advice as to their use may save service calls should the customer later move the instrument any considerable distance.**
7. Do not interfere with the motion of the tone arm at any time.
4. The rubber tires must be kept clean and free from oil, grease, dirt, etc., at all times. Any quick-drying naphtha is satisfactory for cleaning the rubber.

## Two-Side Operation Slide Cycle

| | |
|---|---|
| **Turn Record Support to 10" or 12" position as desired.** | 1. Record Separator posts position themselves in unison by means of belt drive. |
| **Place Records on Posts.** | |
| **Turn Control to "Load" position and return to "Two-Side" position.** | 1. Star wheel stud is rotated away from slide throw-out lever, thus insuring a "Slide" cycle. Motion is transferred from control to the index lever and the star wheel lever. Star wheel lever stud rides in the index lever slot. |
| **Push "Start-Reject" button.** | 1. Through button lever the reject lever is made to push on ratchet lever stud. |

2. The ratchet lever moves out of the way of the cycling switch trip lever.

3. Switch trip lever moves the cycling switch pivot lever, thus tilting the switch and closing the circuit to the cycle motor.

4. Cycle motor starts.

5. Main cam is driven by cycle motor through a chain of gears.

**Tone Arm Rises.**

1. The elevating control lever is rotated because its stud rides on the outer guide on the bottom side of the main cam.

2. Elevating control lever closes shorting switch.

3. Elevating control lever pushes reversing lever.

4. Reversing lever rotates.

5. Elevating control lever pushes elevating lever roller.

6. Elevating lever roller moves in allowing elevating lever to rise, thus pushing up on elevating rod and tone arm.

**Tone Arm Swings Out.**

1. Reversing lever throws reversing switch. Then it latches and holds the switch button in position.

2. Turntable rotates counter-clockwise.

3. Tone arm lever swings outward from motion of its stud against outer guide on top of main cam.

4. It pushes against stud on trip lever.

5. Trip lever moves out and latches to return lever carrying it along.

6. Feed-in spring is depressed.

7. Cycling switch trip lever is reset by protrusion on main cam, and thus moves out of way of ratchet lever stud.

8. Ratchet lever returns to its original position.

**Turntable Discards Played Record.**

1. Eccentric track on top of main cam moves slide roller lever.

2. Slide roller lever pushes slide throw-out lever.

3. Slide throwout lever moves slide control lever.

4. Slide control lever moves slide.

5. Underneath stud on slide moves along edge of turntable locating lever and finally rotates it.

6. Locating lever releases turntable assembly to control of counterbalance and spring, leaving sector gear free to move.

7. Slide strikes sector gear finger and rotates sector gear.

8. Sector gear rotates segment gear.

9. Segment gear, being fastened to turntable pivot shaft, turns this shaft and tilts the turntable.

10. Reversing lever is unlatched by slide at end of its travel. Turntable motor returns to clockwise rotation.

**Record Drops from Stack to Motorboard.**

1. Stud on top of slide moves into claw cam of the separator lever.

2. Lever rotates, thus moving link and crank.

3. Crank rotates separator assembly.

4. Record knife separates bottom record from stack.

5. Shelf rotates out from under bottom record and allows it to drop to motorboard.

**Turntable picks up next record.**

1. Slide reverses direction of travel.

2. Shelf and knife return to original position as top stud on slide releases separator lever.

3 Spring and counterbalance return turntable past its original position as slide recedes from sector gear finger.

4. Turntable spindle finds hole in record and picks record up.

5. Underneath stud on slide finally rotates locating lever

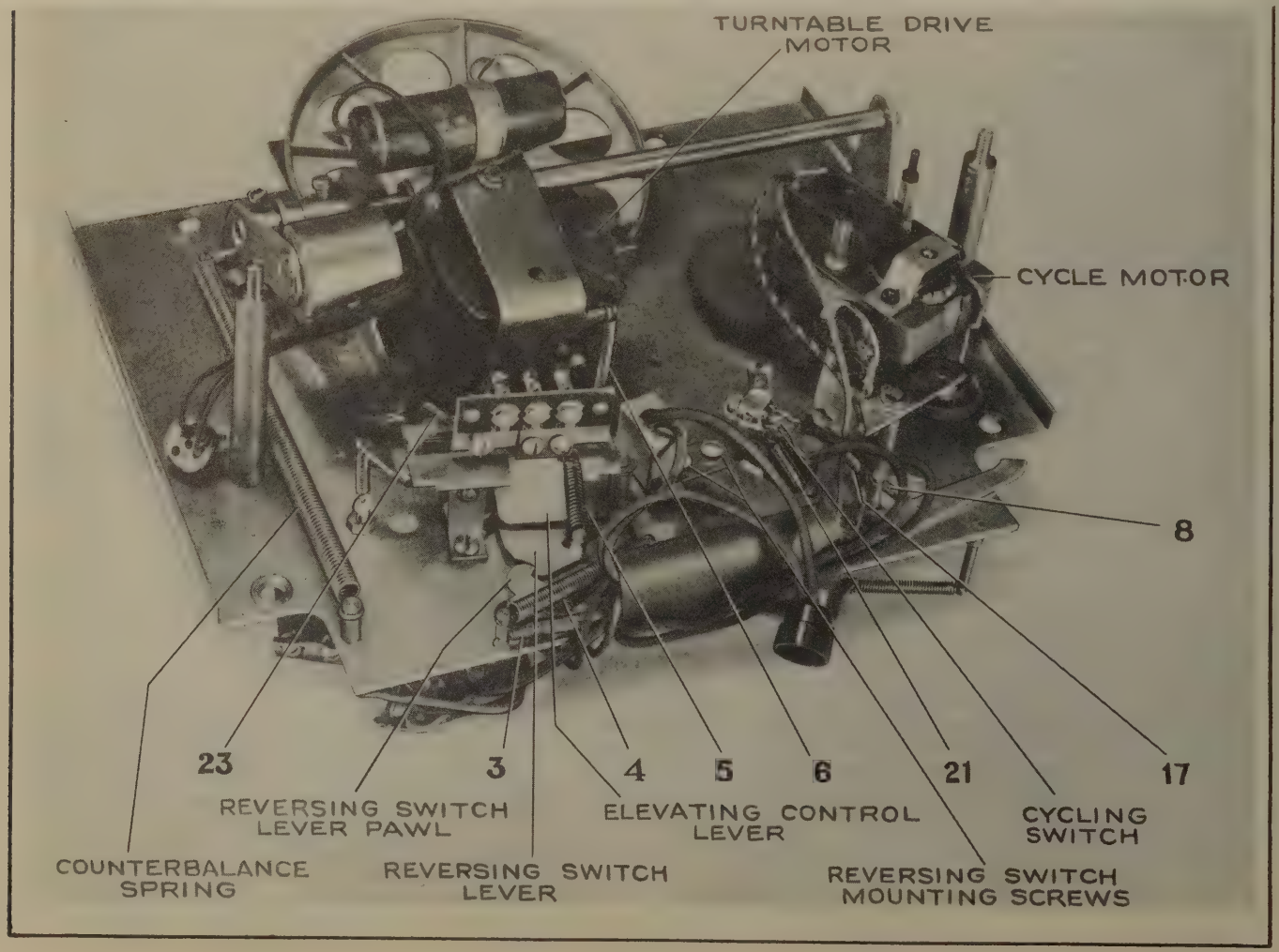
6 Locating lever takes control and returns turntable to exact original position.

7. Turntable drive wheel again contacts drive disc and rotates it.

8. Off-center stud on the main cam and gear pushes star wheel stud.

9. Star wheel rotates 90°.

10. Stud on star wheel unlatches slide throw-out lever.



**Tone Arm Returns.** 1. Main cam allows tone arm lever to recede.
2. This allows return lever to follow, carrying trip lever along.
3. Return lever stops when its index finger reaches rear separator shaft.
4. Thus the trip lever and tone arm are stopped at the correct landing position.

**Tone Arm Lowers.** 1. Lower outside face on main cam recedes.
2. Elevating control lever returns to original position.
3. Reversing lever reaches original position.
4. Elevating lever is lowered, elevating rod follows and tone arm lowers.
5. Elevating control lever releases shorting switch.
6. Release stud on the tone arm lever pushes back the latch on the return lever.
7. Release of the latch frees the return lever from the trip lever and the tone arm.
8. Cycling switch pivot lever drops off the end of the main cam face.
9. Cycling switch returns to original position.
10. Cycle motor stops.

**Sapphire is pushed into music grooves.** 1. Feed-in spring returns to original position pushing stud on trip lever.
2. Trip lever carries tone arm slightly in.

**Top side of Record Plays.**

## Non-Slide Cycle

**Sapphire Reaches Eccentric Groove. Mechanism Trips.** 1. Trip lever receives backward motion from tone arm.
2. Trip pawl pushes ratchet lever.
3. Ratchet lever stud moves away from cycling switch trip lever.
4. Cycling switch trip lever moves cycling switch pivot lever. Switch tilts, closing circuit.
5. Cycle motor starts.

**Tone Arm Rises and Swings Out.** Same as previous cycle.

**Turntable Remains in Playing Position and Turntable Rotation Reverses.** 1. Eccentric track on top of main cam moves the slide roller lever.
2. Slide throw-out lever is not picked up by star wheel since this lever was unlatched during previous cycle.
3. Thus the slide does not move, the reversing lever remains latched and the turntable motor continues to revolve counterclockwise.
4. Off-center stud on main cam pushes stud on star wheel.
5. Star wheel rotates 90°.
6. Star wheel latches slide throw-out lever.

**Tone Arm Returns.** Same as previous cycle.

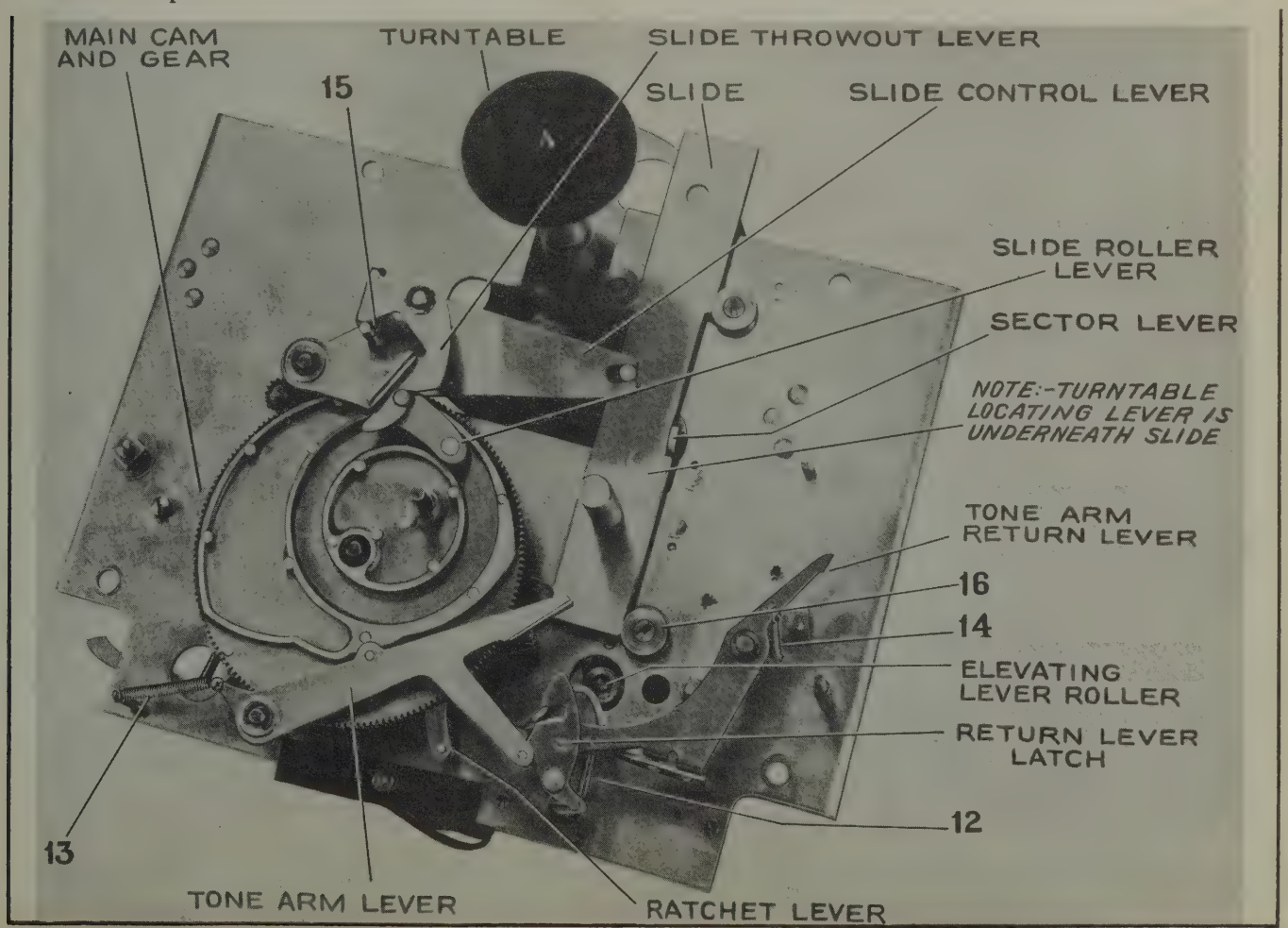
**Tone Arm Lowers.** Same as previous cycle except: 1. Reversing lever remains latched and does not return.

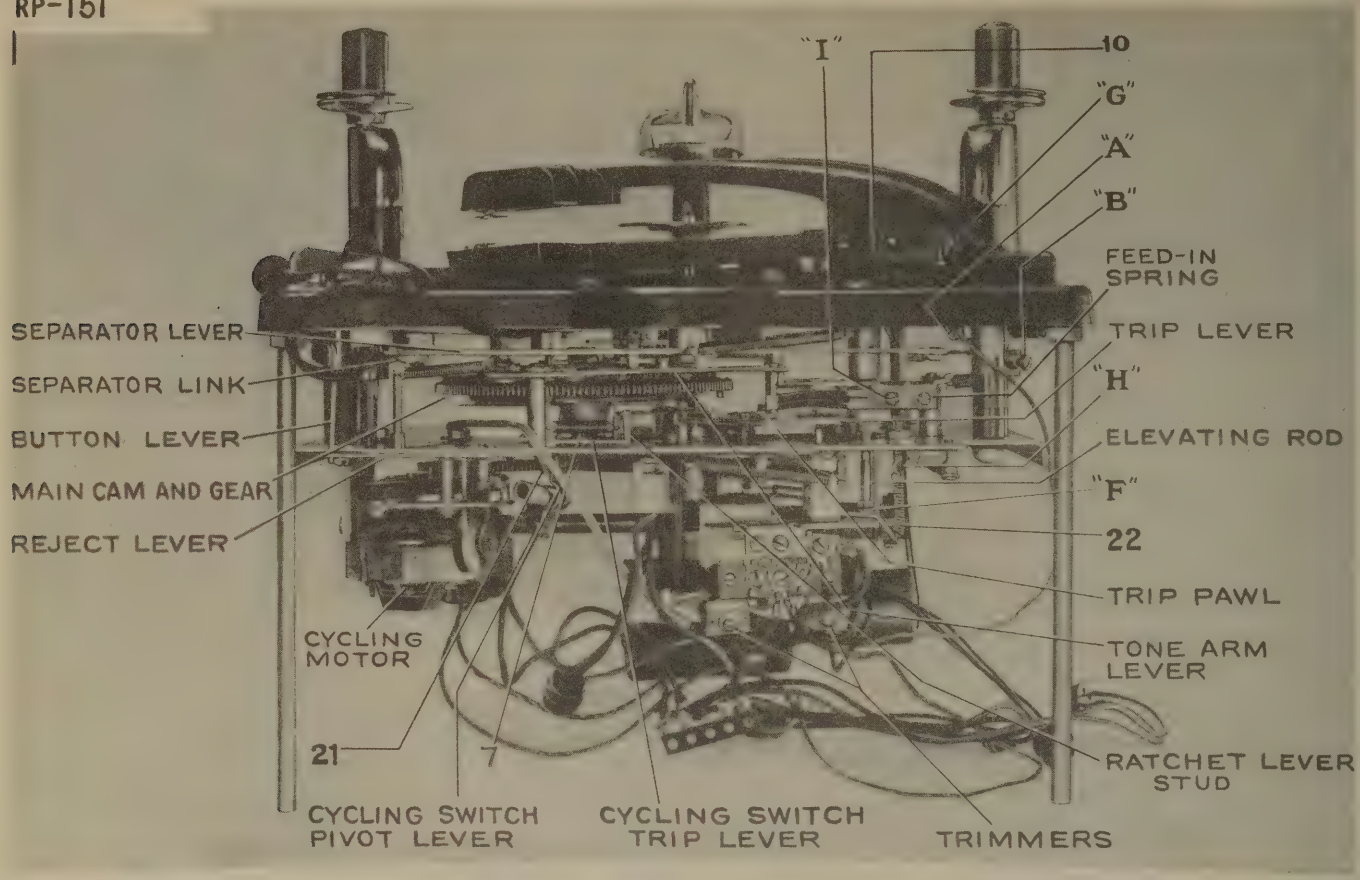
**Bottom Side of Record Plays.**

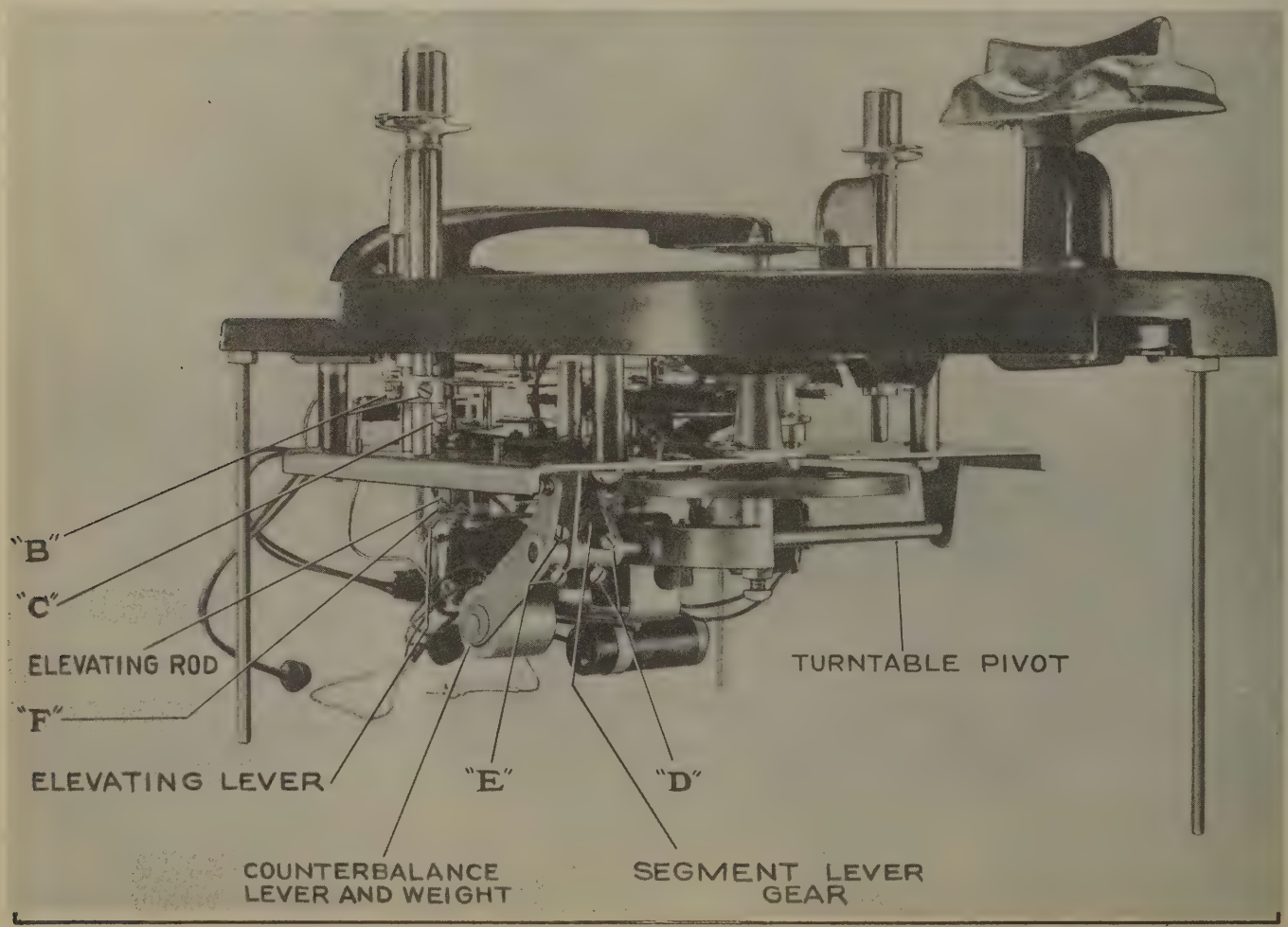
Slide and non-slide cycles continue alternately until entire stack of records has been played.

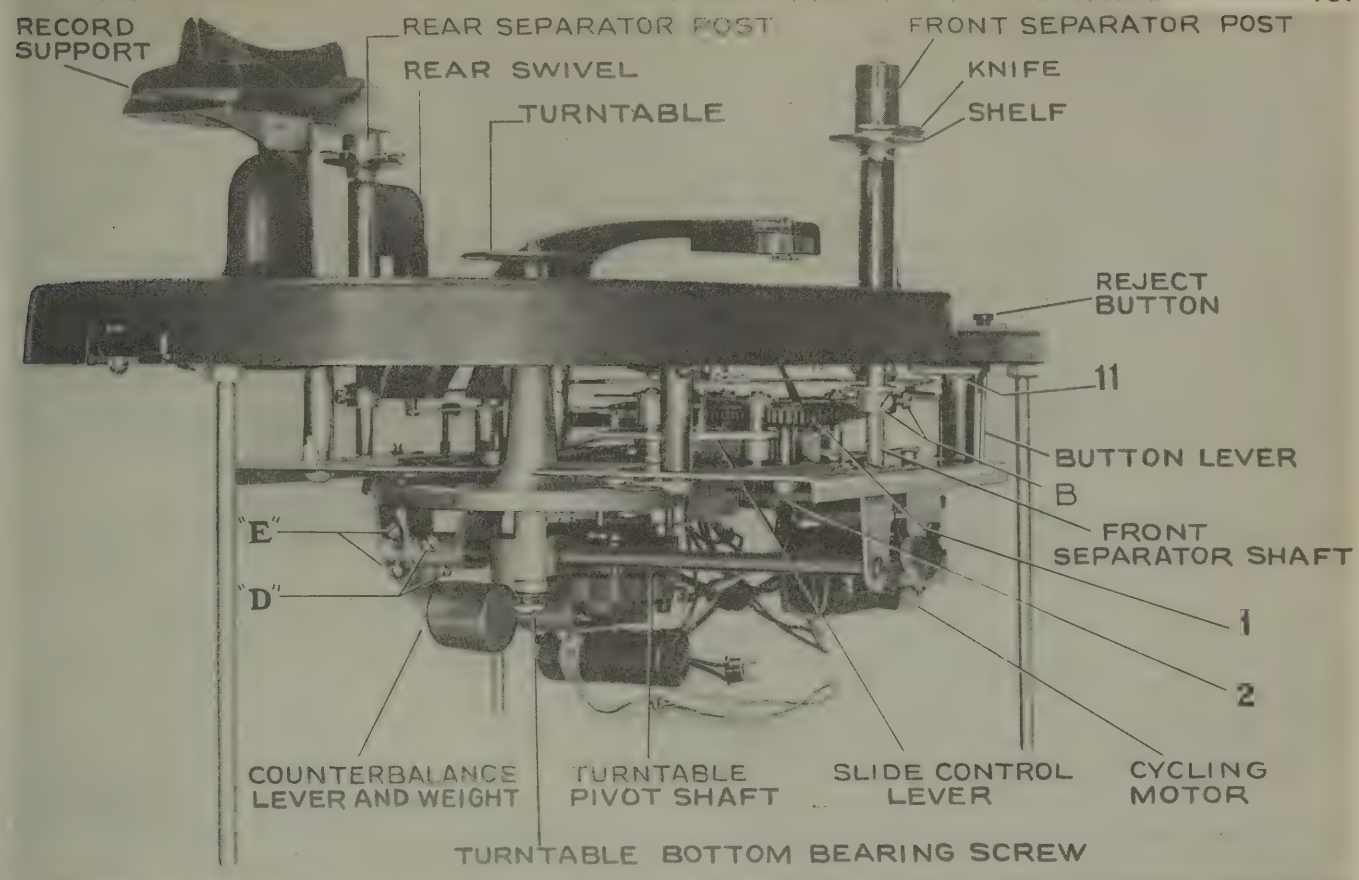
After last record is played, mechanism trips, goes through cycle, and tone arm comes to rest on "Stop" button, thus opening the a.c. circuit.

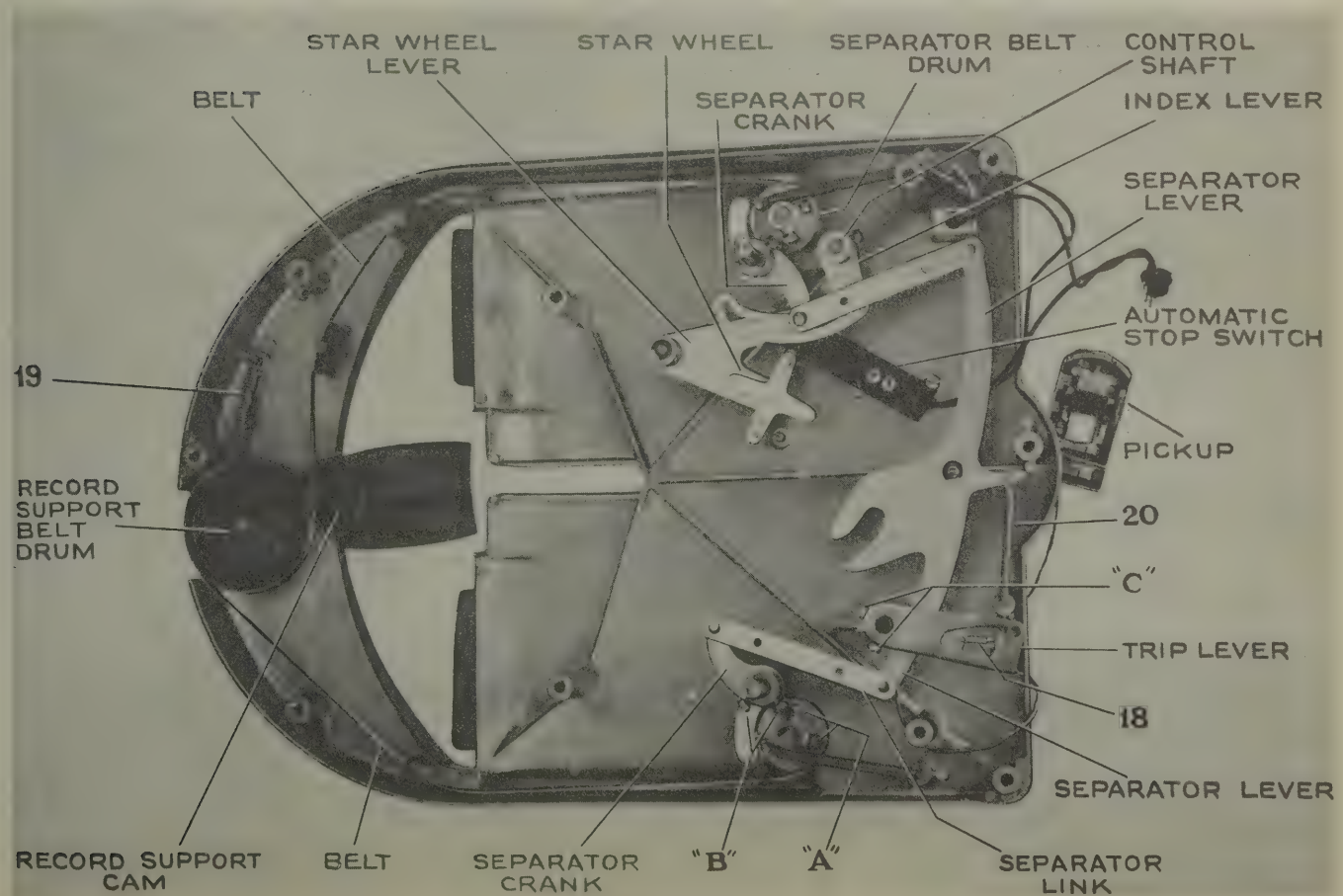
In the "One-Side" position, the star wheel is pushed out of the path of the main cam stud and all cycles are **slide cycles.**




"I"
10
"G"
"A"
"B"
FEED-IN SPRING
SEPARATOR LEVER
SEPARATOR LINK
BUTTON LEVER
MAIN CAM AND GEAR
REJECT LEVER
TRIP LEVER
"H"
ELEVATING ROD
"F"
22
TRIP PAWL
TONE ARM LEVER
CYCLING MOTOR
21
7
RATCHET LEVER STUD
CYCLING SWITCH PIVOT LEVER
CYCLING SWITCH TRIP LEVER
TRIMMERS


"B"
"C"
ELEVATING ROD
"F"
ELEVATING LEVER
"E"
"D"
TURNTABLE PIVOT
COUNTERBALANCE LEVER AND WEIGHT
SEGMENT LEVER GEAR


RECORD SUPPORT
REAR SEPARATOR POST
REAR SWIVEL
TURNTABLE
FRONT SEPARATOR POST
KNIFE
SHELF
REJECT BUTTON
11
BUTTON LEVER
B
FRONT SEPARATOR SHAFT
1
2
"E"
"D"
COUNTERBALANCE LEVER AND WEIGHT
TURNTABLE PIVOT SHAFT
SLIDE CONTROL LEVER
CYCLING MOTOR
TURNTABLE BOTTOM BEARING SCREW


STAR WHEEL LEVER
STAR WHEEL
SEPARATOR BELT DRUM
CONTROL SHAFT
BELT
SEPARATOR CRANK
INDEX LEVER
SEPARATOR LEVER
AUTOMATIC STOP SWITCH
19
PICKUP
RECORD SUPPORT BELT DRUM
20
"C"
TRIP LEVER
18
SEPARATOR LEVER
RECORD SUPPORT CAM
BELT
SEPARATOR CRANK
"B"
"A"
SEPARATOR LINK

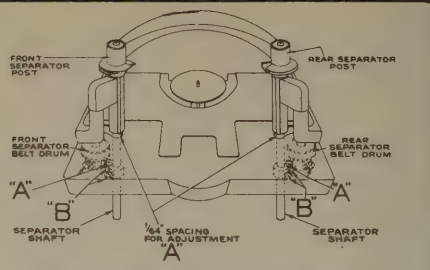
## *Quick Reference Chart of*

# RP-151 Adjustments

**Records will not fit properly on the three record posts.**

*(Record Post Spacing)*

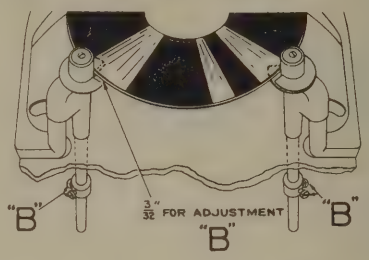
Turn the record support to the 10-inch position. Loosen the set screws "A." Move the front record separator post until its shaft is 1/64 from the end of the motorboard slot. Turn the belt drum to take up the slack in the belt and tighten the zinc-plated screw being certain to maintain the 1/64-inch spacing. Repeat the adjustment on the rear separator post. Check by placing a 10-inch record on the shelves posts and then tighten the copper-plated screws. Care should be taken to leave a small vertical clearance between the belt drum and the motorboard. The 12-inch position is automatically maintained.




**Records fail to drop at proper time.**

*(Record Shelf Timing)*

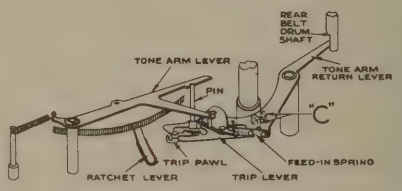
Place a 10-inch record on the shelves so that it contacts the front and rear record separator posts. With the changer out-of-cycle loosen the set screws (B) and turn the record separator shaft until the record separating knife is 3/32-inch away from the record edge. Position set screw collar bottom edge 1-3/32 above the bottom plate. Tighten the zinc-plated screw, run through cycle several times as a check, then tighten the copper-plated screw. Repeat the adjustment on the rear separating knife.




**Sapphire fails to land at proper point.**

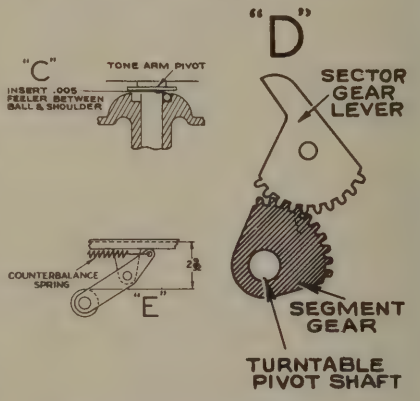
*(Tone Arm Position with Respect to Trip Lever)*

Place a 10-inch record on the turntable and rotate the changer through cycle until the sapphire is just ready to land. Place a .005 feeler between the shoulder on the tone arm pivot shaft and its ball bearing as shown. Loosen the set screws (C). Make certain that the tone arm return lever is against the record separator shaft and the pin on the trip lever is against the tone arm return lever. Move the tone arm to the point of proper landing, be sure the set screw collar is up against the tone arm pivot shaft bushing, then tighten the zinc-plated screw. Run through cycle several times as a check, then tighten the copper-plated screw. Remove feeler. The 12-inch landing is then automatically correct.




**Spindle fails to pick up the record or turntable fails to drop the record.**

Remove the counterbalance spring. Loosen set screws (D). (See photograph for screw location.) Centrally locate the turntable with respect to the front and rear edges of the motorboard slot by sliding the turntable pivot shaft in its bearings. Mesh the sector and segment gears as shown. Holding them in this position, move the turntable assembly until the turntable is level. Tighten screws (D).




**Turntable does not return to proper position.**

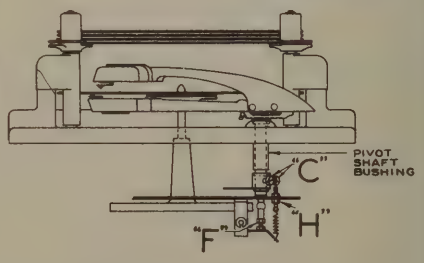
*(Turntable Vertical Position)*

Loosen set screws (E). (See photograph for screw location.) Set the counterweight as shown. Check to see that there is clearance between the two set screw collars (D-E) and the turntable pivot shaft bearing. Tighten the zinc-plated screw (E), run through cycle several times as a check, then tighten the copper-plated screw (E). Replace the counterbalance spring.

**Sapphire fails to clear record on turntable.**

*(Tone Arm Height While in Cycle)*

Rotate the changer through cycle until the tone arm has moved into its cycle position. Adjust the screw (F) until the sapphires are equidistant from the two sides of the record and tighten the locknut.




**Top sapphire jumps grooves or pushes too hard against record.**

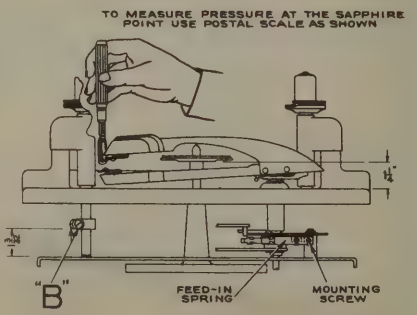
*(Top Sapphire Pressure)*

Adjust the screw (G) in the rear of the tone arm until the pressure measured at the point of the top sapphire is approximately one ounce. A suggested means of making this check is shown in the accompanying sketch.

**Bottom sapphire jumps grooves or pushes too hard against record.**

*(Bottom Sapphire Pressure)*

Adjust the eye screw and locknut (H) as shown until the pressure measured at the point of the bottom sapphire is approximately one ounce. With no-load setting of scale adjusted to read two ounces, bottom pickup should be pushed away from record by pressing down on it with the scale. Sapphire pressure should be adjusted to a scale reading of one ounce.




**Sapphire lands properly but fails to feed into music grooves or feeds in too fast and jumps several grooves.**

*(Feed-in Spring)*

Adjust the feed-in spring by means of the screw (I) until the sapphire feeds in smoothly without jumping grooves. Check to see that the spring clears the trip lever pawl and that the mounting screw is tight. Be sure to keep the viscoloid free from grease.

**Turntable too high or too low.**

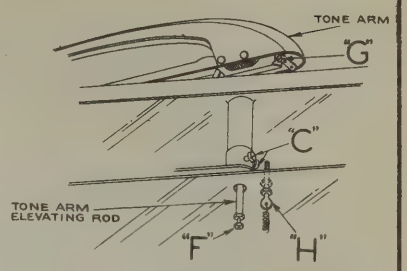
*(Turntable Height)*

Loosen locknut and adjust the turntable bottom bearing screw until the bottom of the turntable is above the motorboard. Tighten the locknut.

**Motor fails to reverse at proper time.**

*(Reversing Switch Position)*

Loosen the reversing switch mounting screws. Rotate the changer through cycle until the main cam has forced the trip lever to its outermost position. Move the switch until the reversing cam has fully compressed the switch against the spring. Lock in position with the mounting screws.



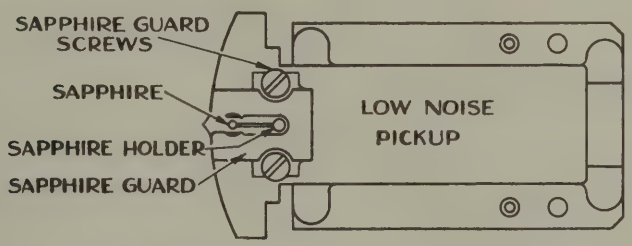

## The Low Noise Pickup

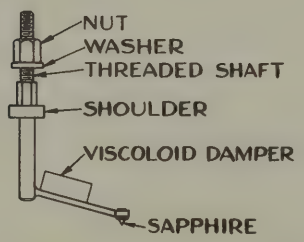
**Specifications....** Output at 400 cycles..... 0.50 volts
Impedance at 1,000 cycles... 75,000 ohms

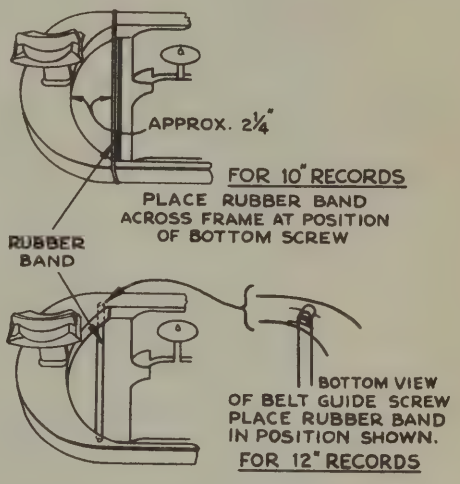
**Replacement of Complete Unit...** Simply slide the unit out of the tone arm and insert a new one.

**Replacement of Sapphire.....** Caution: Never bend the sapphire support wire. Slide the pickup forward out of the arm.

The nut on the sapphire holder assembly is locked by a light cement (such as Glyptal). Extreme care should be used when loosening the nut so that the twisting motion does not break the crystal.





APPROX. 2¼"
FOR 10" RECORDS
PLACE RUBBER BAND ACROSS FRAME AT POSITION OF BOTTOM SCREW
RUBBER BAND
BOTTOM VIEW OF BELT GUIDE SCREW
PLACE RUBBER BAND IN POSITION SHOWN.
FOR 12" RECORDS

*A rubber band stretched across the motorboard as shown permits continuous playing of one record on RP-151 record changer during service checking of the mechanism.*

**Trip Lever and Trip Pawl Spring:**

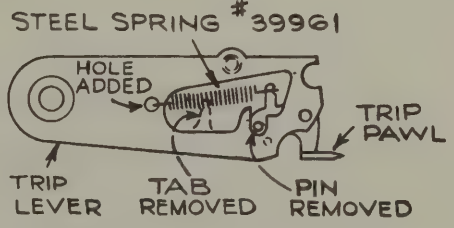
The original bronze trip-pawl spring, Stock No. 38562, is no longer available. When this spring requires replacement, due to loss or irreparable damage, it is necessary to install either a new steel spring, Stock No. 39961, in accordance with instructions given below, or else install a complete new trip lever assembly which employs the steel spring.

In RP-151, the new trip lever, trip pawl, and steel spring assembly is Stock No. 38561.

The new lever and spring assemblies will be supplied on orders for the original assemblies.

**Installing Steel Spring No. 39961 on Trip Lever:**

1. Drill a 3/32-inch hole in lever as shown.
2. Cut off the tab that was used to anchor the original bronze spring.
3. Install steel spring as shown.



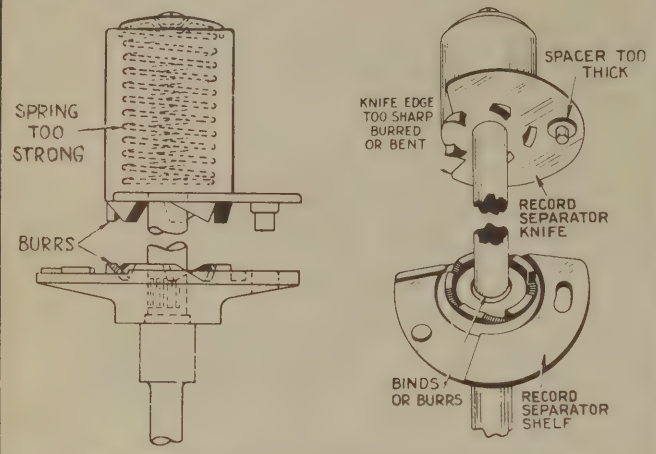

*Trip lever with new steel spring. This steel spring can be installed on original lever in place of bronze spring by drilling a 3/32 inch hole and cutting off the tab on original lever.*

## Unequal Output From The Two Pickups

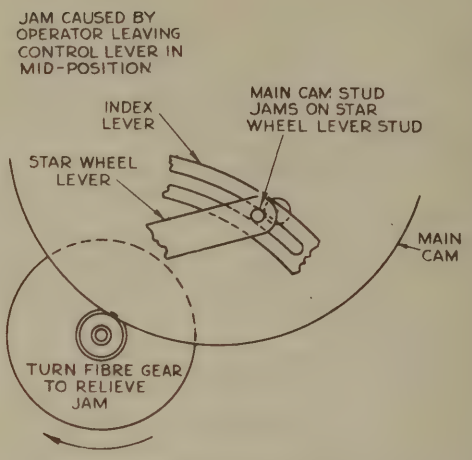
The two small trimmer capacitors used to equalize the output of the two pickups are mounted on the back of the terminal boards shown in the center. These trimmer capacitors are placed in series with the respective pickups. The one adjacent to the terminal marked red controls the output voltage from the top pickup while the one adjacent to the terminal marked black controls the voltage delivered by the bottom pickup. To equalize the pickups, first adjust both trimmers to maximum capacity and then measure the output voltage delivered across the voice coil when playing the pickups on a constant frequency record. Reduce the capacity of the trimmer connected in series with the pickup delivering the greater voltage until both voltages are equal. This adjustment may have to be repeated several times in order to obtain an exact balance. The pressure on the bottom pickup may be changed slightly if the trimmer capacitor range is insufficient to obtain equal outputs.

## Record Jams

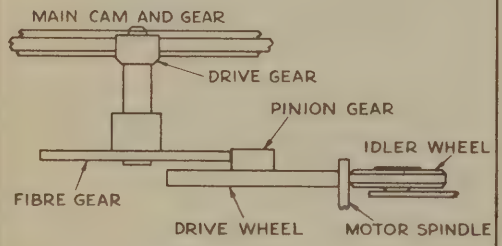
Record too thick, too thin, or warped. Separator knife shaft binds in its bushing.



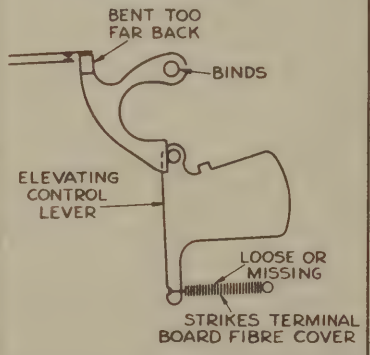

## Mechanism Jams


JAM CAUSED BY OPERATOR LEAVING CONTROL LEVER IN MID-POSITION
INDEX LEVER
MAIN CAM STUD JAMS ON STAR WHEEL LEVER STUD
STAR WHEEL LEVER
MAIN CAM
TURN FIBRE GEAR TO RELIEVE JAM

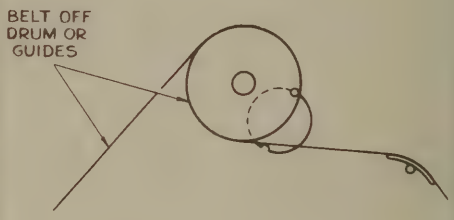
## Cycling Drive System




## Reproduced Noise During Cycle




## Record Posts Fail to Move




## Turntable Stops While Playing Record or Fails to Reverse Rotation

First make certain that sapphires are equi-distant from the record on the turntable when the tone arm has been raised or lowered to its "in-cycle" position. Check Adjustment "F" if necessary.

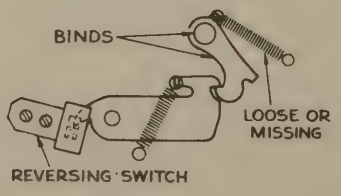
See that turntable is level making Adjustments "D" and "E" if necessary.

Check reversing switch adjustment.

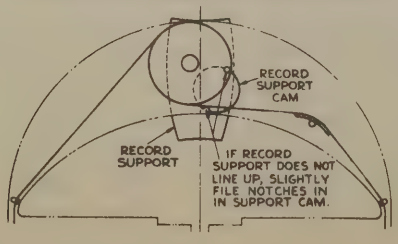
Check turntable height adjustment.

Warped record strikes automatic stop switch.

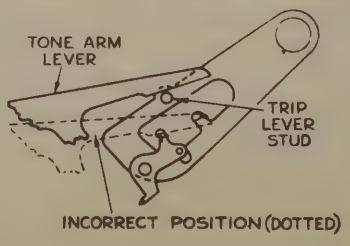
Automatic stop switch button binds on motorboard and fails to rise.



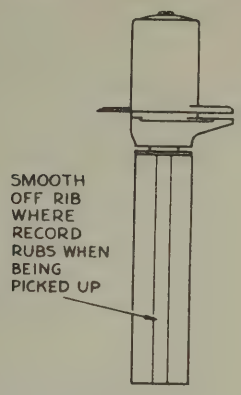

## Record Support Misaligned




## Tone Arm Action Erratic



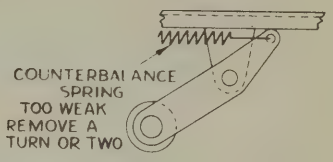
# Caution: Do Not Handle The Tone Arm While The Mechanism Is Operating

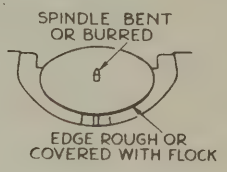



## Fails To Pick Up Record or 12-Inch Record Rubs Tone Arm

Check to see that turntable returns to level position. If necessary make Adjustments "D" and "E." Check turntable height.

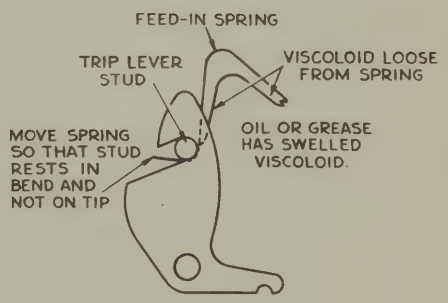
Edge of hole in record is raised.



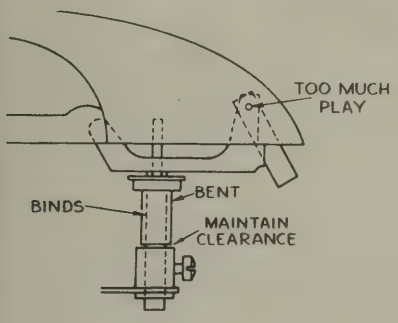

## Incorrect Feed-In

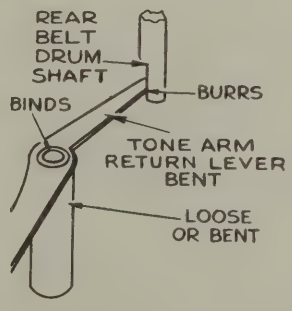
The feed-in spring has no effect until just after the pickup has landed. It then springs back to its orfginal position, pushing on the trip lever stud and moving the pickup toward the music grooves. When feeding in on the top side of a record the feed-in spring is assisted by the rotational force of the record; on bottom side feed-in this force opposes the feed-in spring's action. Adjustment "I" should be made so that the sapphire does not jump grooves on top side feed-in and still accomplishes bottom side feed-in in less than ten seconds. Instrument is not level. Pickup cable binds.

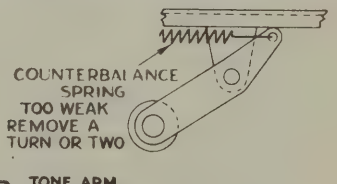

FEED-IN SPRING
TRIP LEVER STUD
VISCOLOID LOOSE FROM SPRING
MOVE SPRING SO THAT STUD RESTS IN BEND AND NOT ON TIP
OIL OR GREASE HAS SWELLED VISCOLOID.

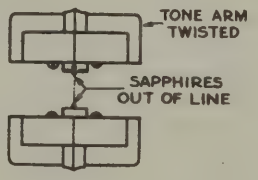
## Lands Incorrectly

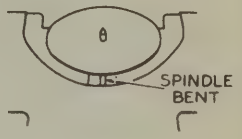
First check Adjustment "C." Make certain that turntable returns to level position making Adjustment "D" and "E" if necessary. Be sure that sapphire clears record on turntable making Adjustment "F" if necessary. Pickup cable binds.




### Pickup Arm Springs:

In the Replacement Parts List, Pickup and Arm Assemblies, in the RP-151 Automatic Record Changer service note, the following change and addition should be made:

| Stock No. | Description |
|---|---|
| 38455 | Spring—Coil spring (10) for upper pickup pressure adjustment (2 required).... |
| 39 695 | Spring—Flat spring for pickup arm pivot tension.... |

### Idler Wheel Fiber Washers:

In order to reduce idler wheel noise, the two metal washers have been replaced by two fiber washers in the Idler Wheel Assembly, Stock No. 36274, for the above record changers. The new fiber washers are Stock No. 39996.

### Crystals and Sapphires:

The following Stock Numbers for crystal-and-sapphire assemblies supersede all previous listings:

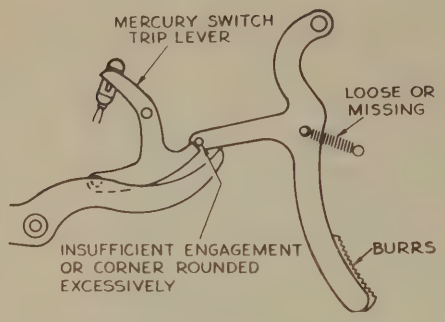
Do not replace complete pickup where sapphire only requires replacement.

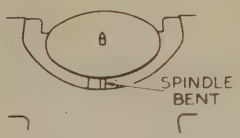
| Stock No. of Sapphire and Holder, less nut— | Stock No. of Crystal and Sapphire Assembly— |
|---|---|
| 38449 | Top, 39919 (Alum. case) Bottom, 38598 (Alum. case) |

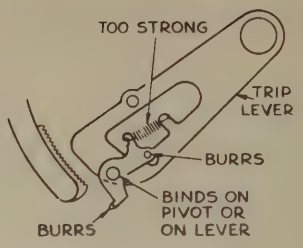
## Trips Early

Off-center record.

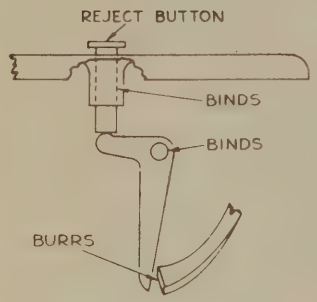
Trip pawl not aligned with ratchet lever teeth.

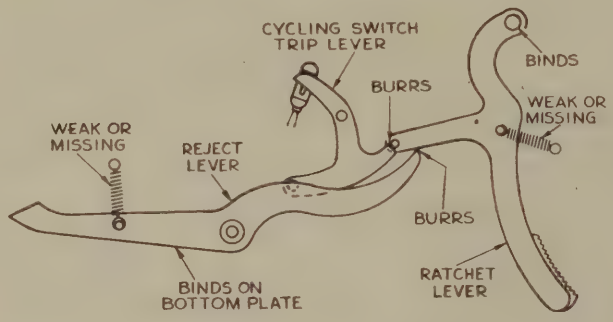


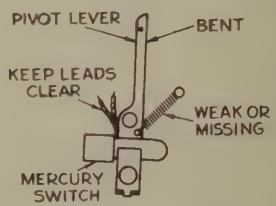



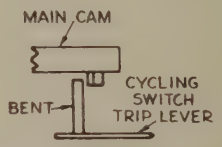




## Trips Continuously



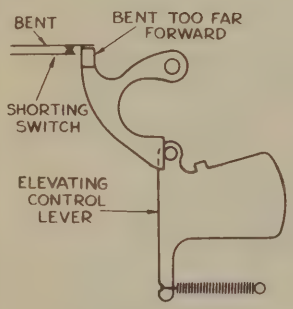



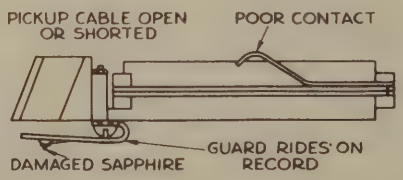



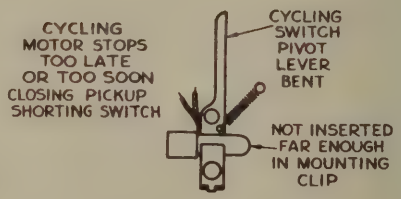




## No—Low—Distorted Output

Defective crystal. Shield over terminal board is shorting to cable lugs. Sapphire strikes guard. Nut on sapphire holder shaft is loose.

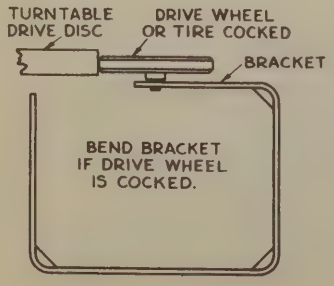


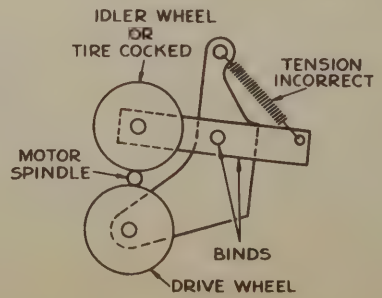



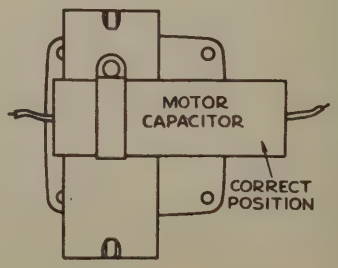


CYCLING MOTOR STOPS TOO LATE OR TOO SOON CLOSING PICKUP SHORTING SWITCH
CYCLING SWITCH PIVOT LEVER BENT
NOT INSERTED FAR ENOUGH IN MOUNTING CLIP

## Slow or Varying Speed

Motor support spring tension is incorrect.



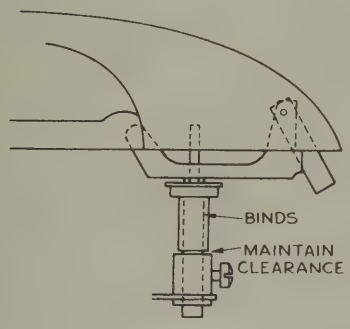
## Repeats Grooves

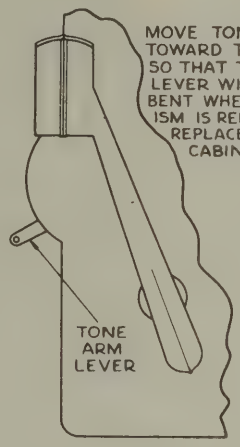
The mercury switch is operated to break the a.c. supply to the cycling motor a few moments before all the cycling operations are completed. The "coast" of the mechanism should then bring the tone arm lever stud against the return lever latch and disconnect the return lever from the trip lever. If excessive friction anywhere in the cycling motor or its gear train reduces this "coast" the pickup will land and repeat grooves near the beginning of the record. Other causes for the repeating of grooves are shown below.

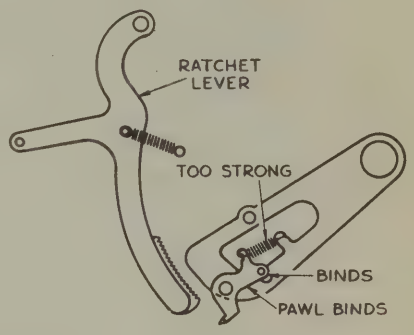
Check pickup pressure Adjustments "G" and "H."

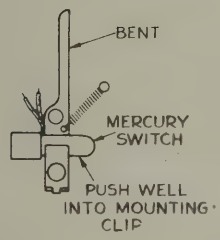
Groove wall in record is broken.

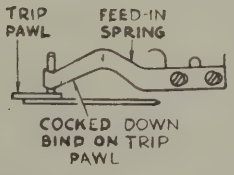
Pickup cable binds.

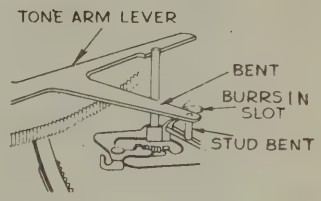




MOVE TONE ARM IN TOWARD TURNTABLE SO THAT TONE ARM LEVER WILL NOT BE BENT WHEN MECHANISM IS REMOVED OR REPLACED IN CABINET.
TONE ARM LEVER



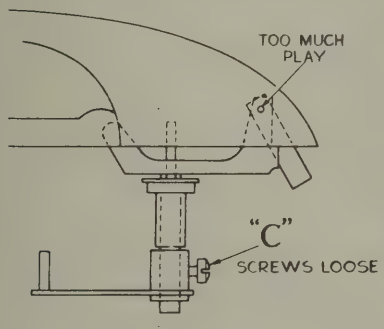



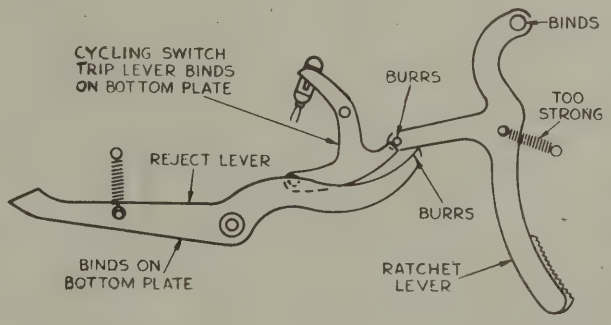



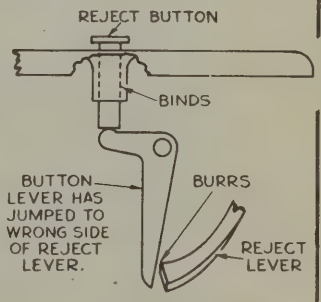



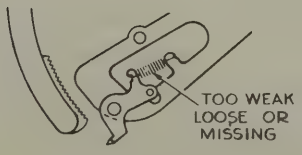

## Fails To Trip (or Fails to Cycle)

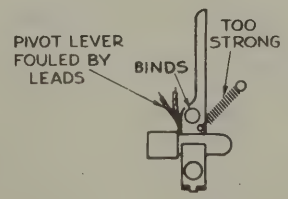
Eccentric groove on record is too shallow or discontinuous. Defective mercury switch, circuit, or motor.

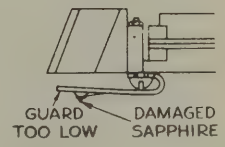



## Record Drops Too Soon

Check Adjustments "B" and "A" setting the knife spacing greater than 3/32 inches if necessary.

## Adjustment Screws Slip

Two cone-pointed set screws Stock No. 31118 may be used if Adjustment "D" fails to hold. Similarly on Adjustment "E" two cone-pointed screws Stock No. 38527 may be used.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| 38456 | Arm—Upper and lower pickup arms only |
| 38459 | Bracket—Pivot arm spring tension bracket and screw |
| 38457 | Cable—Shielded pickup cable — connects pickup crystals to shorting switch. Note: Before ordering a replacement crystal pickup, inspect the used pickup. Order the stock number stamped on its case. |
| 38598 | Crystal—Pickup crystal and holder with sapphire and holder (bottom unit) |
| 38453 | Crystal—Pickup crystal and holder with sapphire and holder (top unit) |
| 38451 | Damper—Viscoloid damper for sapphire holder |
| 38452 | Guard—Sapphire guard |
| 38450 | Nut—Special nut and washer for sapphire holder |
| 38458 | Nut—Speed nut to hold cable in pickup arm |
| 38454 | Pivot—Pivot arm and shaft assembly—less spring and adjusting screw |
| 38449 | Sapphire—Sapphire and holder—less nut |
| 37763 | Screw—No. 2-56 x 1/8 screw to mount sapphire guard (2 required) |
| 38455 | Spring—Pivot arm spring (10) |
| | **TOP PLATE ASSEMBLY** |
| 38461 | Belt—Record separator belt (steel) (2 used) |
| 38484 | Button—Pickup stop switch button (rubber) |
| 38485 | Button—Reject button |
| 38473 | Cam—Record support cam—less pin |
| 38470 | Cap—Record separator cap (24) |
| 38491 | Crank—Record separator crank with set screws —less connecting lever (2 used) |
| 38489 | Cushion—Rubber cushion for records (round) (under felt) |
| 38441 | Decalcomania — "RCA Victrola — His Master's Voice" |
| 38462 | Drum—Record support belt drum (1 required) |
| 38463 | Drum—Record separator belt drum—less screws (2 required) |
| 38476 | Escutcheon—Index escutcheon |
| 38486 | Felt—Top plate felt |
| 38467 | Knife—Record separator knife |
| 38477 | Lever—Control or selection lever and shaft |
| 38481 | Lever—Index lever |
| 38490 | Lever—Record separator lever—less links |
| 38483 | Lever—Button lever and bracket |
| 38478 | Lever—Star wheel lever and bushing—less star wheel and spring |
| 38474 | Pin—Drive pin for record support cam |
| 38460 | Plate—Finished top plate (cast) only, with pins and studs—less operating parts |
| 38469 | Screw—No. 6-32 oval head screw for record separator cap |
| 31118 | Screw—No. 10-32 x 5/16 fillister head cone point set screw for record separator belt drum, record separator crank, or index lever |
| 32869 | Screw—No. 10-32 x 5/16 fillister head set screw for record separator belt drum and record separator crank |
| 38466 | Shelf—Record separator shelf and shaft—less top knife, cap, and spring |
| 38471 | Spacer—Spacing washer for record separator knife |
| 38468 | Spring—Record separator spiral spring (25) |
| 38488 | Spring—Spiral spring for record separator belt drum (11) |
| 38475 | Spring—Spiral spring for record separator lever (20) |
| 38487 | Spring—Spiral spring for record support belt drum (19) |
| 38480 | Spring—Spiral spring for star wheel |
| 38472 | Support—Record support and shaft (1 required) |
| 33900 | Switch—"Off-On" main switch |
| 38482 | Switch—Stop switch—operated by pickup |
| 38464 | Swivel—Support and swivel for front record separator |
| 38465 | Swivel—Support and swivel for rear record separator |
| 2917 | Washer—"C" washer for star wheel, record separator link and lever, record support belt drum, star wheel lever, and reject button |
| 8078 | Washer—Spring washer for star wheel lever |
| 38479 | Wheel—Star wheel |
| | **BOTTOM PLATE ASSEMBLY** |
| 38536 | Arm—Cycling motor idler arm—less wheel |
| 38525 | Arm—Turntable drive motor arm—less wheel |
| 38547 | Board—Pickup shorting switch terminal board—less mounting bracket, pickup elevating lever, and trimmer condensers |
| 38539 | Bracket—Cycling motor mounting bracket |
| 38551 | Bracket—Tone arm elevating lever and bracket —less lever |
| 38523 | Bracket—Turntable drive motor mounting bracket |
| 38845 | Cable—Shielded output cable—connects to shorting switch |
| 38511 | Cam—Cam, gear, and bearing assembly |
| 38548 | Condenser—Trimmer condenser (2 required) |

| STOCK No. | DESCRIPTION |
|---|---|
| 38533 | Disc—Turntable bottom bearing discs (1 felt and 1 laminated) |
| 38496 | Gear—Fibre drive gear and set screw—engages pinion on rubber-tired motor drive wheel (2) |
| 38495 | Gear—Pinion gear and shaft—engages cam gear (1) |
| 38505 | Gear—Sector gear and lever mounted on bottom plate—engages segment on turntable—motor pivot shaft |
| 38526 | Gear—Turntable pivot shaft segment |
| 38538 | Grommet—Rubber grommet for mounting cycling motor |
| 34368 | Grommet—Rubber grommet for turntable motor mounting (2 required) |
| 38493 | Lever—Cycling switch pivot lever or follower arm |
| 38494 | Lever—Cycling switch trip lever |
| 38512 | Lever—Reject lever |
| 38497 | Lever—Slide roller lever—engages cam |
| 38499 | Lever—Slide control lever—engages slide |
| 38504 | Lever—Turntable locating lever—engages sector gear and lever on bottom plate |
| 38544 | Lever—Reversing lever, operates motor reversing switch |
| 38543 | Lever—Elevating control lever, operates tone arm elevating lever and pickup shorting switch |
| 38549 | Lever—Tone arm elevating lever—less roller |
| 38509 | Lever—Tone arm lever |
| 38516 | Lever—Tone arm ratchet lever |
| 38506 | Lever—Tone arm return lever — less feed-in spring and damper |
| 38500 | Lever—Slide throw-out lever |
| 38474 | Pin—Drive pin to fasten turntable bracket to spindle shaft |
| 38552 | Pin—Pivot pin for tone arm elevating lever |
| 38492 | Plate—Bottom plate complete with all riveted and welded brackets and studs, cycling switch trip lever, and cycling switch pivot lever and bracket |
| 38498 | Roller—Cam roller for slide roller lever |
| 38502 | Roller—Slide roller, stud and nut (16) |
| 38550 | Roller—Tone arm elevating lever roller |
| 38527 | Screw—No. 10-24 x 7/16 cone point set screw for turntable pivot shaft segment |
| 38528 | Screw—No. 10-24 x 7/16 set screw for turntable pivot shaft segment |
| 31118 | Screw—No. 10-32 x 5/16 fillister head, cone point set screw for fibre drive gear and counter weight |
| 32869 | Screw—No. 10-32 x 5/16 set screw for counterweight (E) |
| 38532 | Screw—5/16—18 x 3/4 screw and nut for turntable spindle bottom bearing |
| 38553 | Screw—Special screw to hold tone arm elevating lever spring |
| 38520 | Shaft—Motor and turntable pivot shaft |
| 38503 | Slide—Slide plate and studs assembly |
| 38537 | Spring—Cycling motor idler arm spring—1-in. long (18 turns) (17) |
| 38540 | Spring—Cycling switch pivot lever spring — 13/16-in. long (34 turns) (21) |
| 38507 | Spring—Tone arm feed-in spring and damper |
| 38513 | Spring—Reject lever spring (8) |
| 38501 | Spring—Slide throw-out lever spring (15) |
| 38546 | Spring—Spiral spring for motor reversing switch lever (5) |
| 38519 | Spring—Spiral spring for cycling switch trip lever (7) |
| 38545 | Spring—Spiral spring for elevating control lever (4) |
| 38514 | Spring—Spiral spring for motor reversing switch lever pawl (3) |
| 38508 | Spring—Spiral spring for pickup return lever (14) |
| 38518 | Spring—Spiral spring for ratchet lever |
| 38554 | Spring—Spiral spring for tone arm elevating lever (22) |
| 38515 | Spring—Spiral spring for tone arm return lever pawl (12) |
| 38510 | Spring—Tone arm lever spring (13) |
| 38524 | Spring—Turntable drive motor idler arm spring spring (23) |
| 38531 | Spring—Turntable drive motor tension spring (6) |
| 38530 | Spring—Turntable pivot shaft counterbalance spring |
| 38521 | Support—Turntable support bracket and spindle bearing—less bearing screw and nut |
| 38541 | Switch—Mercury tube with leads (cycling) |
| 38844 | Switch—Pickup shorting switch |
| 38542 | Switch—Turntable motor reversing switch and bracket |
| 38534 | Turntable—Turntable, spindle shaft, and drive disc assembled |
| 2917 | Washer—"C" washer for slide control levers, tone arm lever, tone arm return lever, main cam, or slide throw-out lever |
| 20165 | Washer—"C" washer for tone arm elevating lever roller, elevating lever pin, cycling motor idler wheel, cycling motor drive wheel, and tone arm ratchet lever |

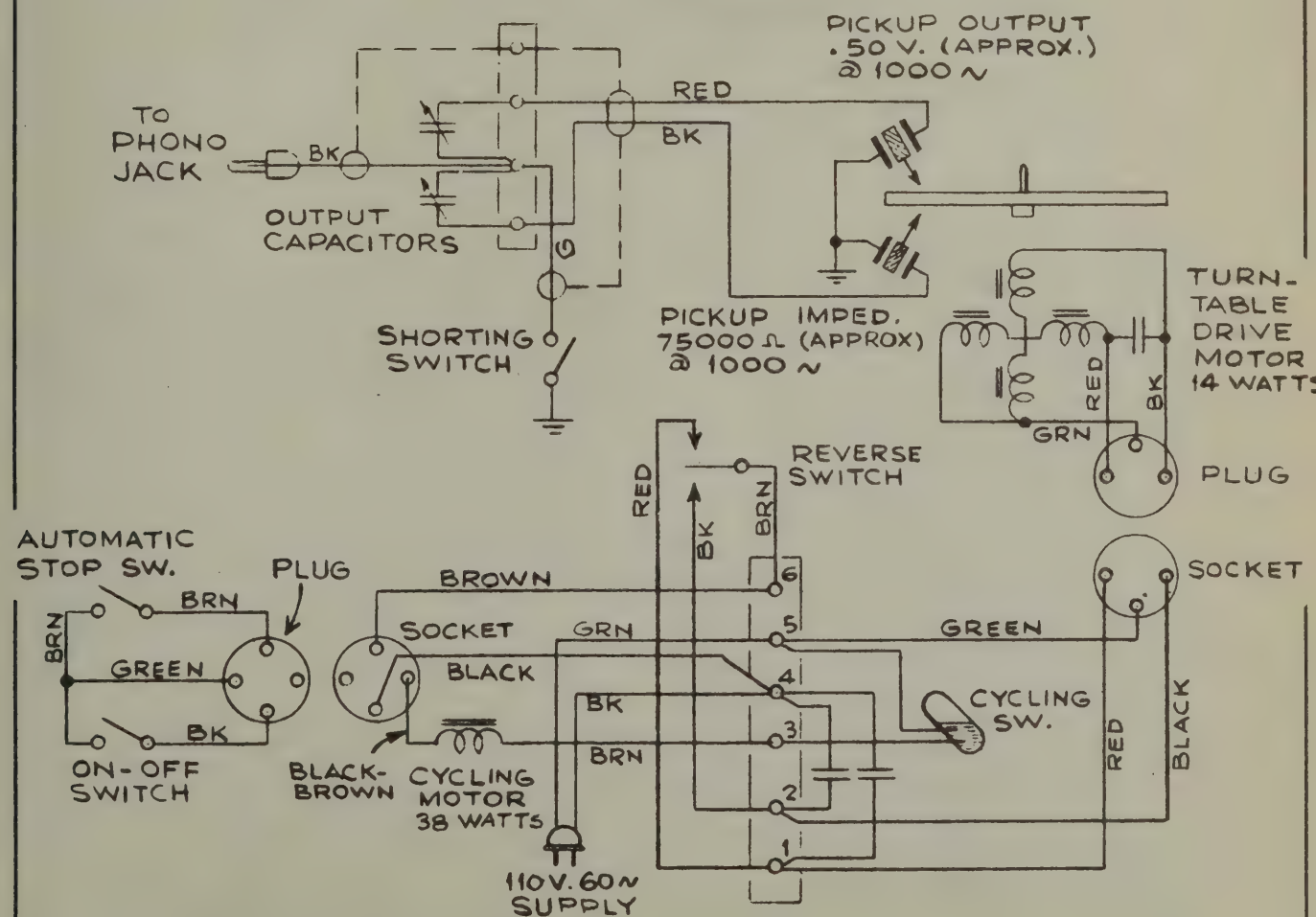
## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| 33726 | Washer—"C" washer for turntable drive wheel or idler wheel |
| 34373 | Washer—"C" washer for turntable idler wheel arm |
| 38529 | Weight—Turntable pivot shaft counterweight and arm |
| 38535 | Wheel—Cycling motor rubber-tired drive wheel and pinion gear |
| 36274 | Wheel—Rubber-tired turntable drive wheel or idler wheel |
| | **CYCLING MOTOR** |
| 38556 | Motor—105-125 volts, 60 cycles |
| | **TURNTABLE DRIVE MOTOR** |
| 36952 | Cap—Bakelite top cover for motor |
| 36955 | Capacitor—1.1 mfd., 200 volts for 60 or 50 cycle motors |
| 38557 | Motor—Motor and capacitor, 105-125 volts, 60 cycles |
| 38558 | Rotor—Rotor and shaft for 60 cycle motor |
| 38848 | Sleeve—Motor spindle sleeve for 50 cycle conversion |

| STOCK No. | DESCRIPTION |
|---|---|
| | **MISCELLANEOUS ASSEMBLIES** |
| 10941 | Ball—1/8 diameter steel ball for pickup arm, or trip lever bearing |
| 38565 | Cable—Output cable and plug—connects shorting switch to amplifier |
| 13762 | Capacitor—1,500 mmfd. |
| 38561 | Lever—Pickup arm trip lever—less spring |
| 30870 | Plug—2-prong male for power supply cable |
| 31572 | Plug—3-contact female for motor cable |
| 31567 | Plug—3-prong male for turntable motor leads |
| 35352 | Plug—4-contact female for motor cable |
| 35384 | Plug—4-prong male for power switch cable |
| 38563 | Rod—Pickup arm elevating rod—less adjusting screw |
| 38564 | Screw—No. 4-40 x 5/16 hex. head screw and nut for pickup arm elevating rod |
| 31118 | Screw—No. 10-32 x 5/16 cone point set screw for trip lever |
| 32869 | Screw—No. 10-32 x 5/16 set screw for trip lever |
| 38559 | Screw—5/16—18 x 1/2 screw to mount lower unit to top plate |
| 38562 | Spring—Spiral spring for trip lever latch (18) |
| 38560 | Washer—Felt washer for pickup arm pivot shaft bearing |

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.



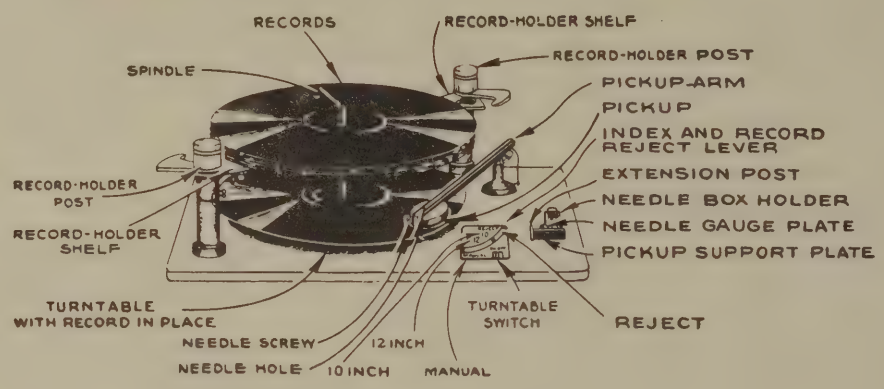
# RP-152, RP-153 RP-155 and RP-157

## Automatic Record Changers

"RP" vs. "MODEL" NUMBERS

| MODEL NO. | RP NO. | MODEL NO. | RP NO. | MODEL NO. | RP NO. |
|---|---|---|---|---|---|
| QU-7 | RP-157 | V-200 | RP-152A | V-300 | RP-152J |
| VA-15 | RP-152 | V-201 | RP-152A | V-301 | RP-153 |
| QU-51M&QU-55 | RP-152R | VHR-202 | RP-155 | V-302 | RP-153 |
| QU-52C | RP-152S | V-205 | RP-152B | VHR-307 | RP-155 |
| QU-52M | RP-152R | V-205A | RP-153 | V-405 | RP-152J |
| V-170 | RP-152 | VHR-207 | RP-155 | VHR-407 | RP-155 |

**RP-155 AND RP-157 ARE EQUIPPED FOR HOME RECORDING, OTHERWISE SIMILAR TO RP-153**




The RP-152 and RP-153 automatic record changers are very similar in design and construction. Most of the parts and adjustments are identical on both. The RP-153 turntable is driven through a worm gear in the motor housing while the RP-152 turntables are driven through a friction drive disc mounted under the turntable.

**On Models RP-152 it is important that the drive motor spindle, and rubber tires on main driving disc and idler pulley be kept clean and free from oil, grease, dirt, or any foreign matter at all times. Any quick-drying naphtha is satisfactory for cleaning these parts.** The drive motor bearing is lubricated from an oil well filled and sealed at the factory. It should not require lubrication in the field.

The rubber-tired drive disc on Models RP-152 is not removable from the spindle. The turntable is fastened to the driving disc by three bolts. If necessary to remove these parts the spindle drive gear set screw should first be removed. The driving disc, turntable and spindle assembly can now be lifted upward from the motorboard. If this is done, great care should be taken not to bend the spindle.

To remove the turntable and spindle on the RP-153 type it is necessary to first remove the tapered pin in the turntable drive arm assembly. The turntable and spindle can then be drawn up through the motorboard bearing.

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc., are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

A pickup shorting switch, located under the motorboard, operates when the pickup is moved outward to the pickup rest.

The 10- and 12-inch records must be absolutely flat for smooth operation.

When a record has been played the pickup moves out, another record is dropped down, and the needle is fed automatically into the starting groove of this record. If the needle fails to enter the starting groove, raise the right-hand side of the cabinet by inserting thin spacers under the feet on that side. If the needle slides over a few grooves, raise the left-hand side of the cabinet in a similar manner.

## Cycle of Operation

In automatic operation (index lever set to "10" or "12"), when the pickup needle enters the eccentric or spiral groove at the inside of the record, the pickup arm swings in the groove, and this motion acts through a friction clutch to "trip" or start the cycle of the automatic record changer mechanism which:

1. Lifts up the pickup arm and swings it out clear of the records.

2. Turns the two record-holder posts, each of which has a "knife" and a "shelf": The knives enter between the bottom record and the rest of the stack. Continuing to turn, the shelves move from under the bottom record and it drops on the turntable, while the rest of the stack of records are supported by the "knives."

3. The pickup arm is then moved to correct position and lowered on the record, while—

4. The record-holder posts are turning back to their original positions, so that the records rest on the shelves, and the knives are in correct position to separate the next record from the stack.

The cycle is completed when the pickup comes down on the record. The pickup arm should not be moved while "in cycle."

1. This instrument is not recommended for playing 10-inch and 12-inch records in **mixed sequence.**

2. **Never use force** to start or stop the motor or any part of the record-changing mechanism or pickup arm.

3. **Warped or damaged records** may cause the mechanism to jam.

4. **Warped records** may slide on one another when playing, resulting in unsatisfactory reproduction.

5. **Do not leave records on the record-holder posts** as they may warp, particularly in warm climates. Warped records may be flattened by placing them on a flat surface with a flat heavy article placed on top of them for a few days.

6. **Do not leave pickup needle resting on a record** or on the turntable. Always place it on the pickup rest.

7. **Do not insert a used needle in the pickup,** and avoid turning a needle after it has been used.

8. If for any reason the phonograph stalls, turn off the turntable switch and remove the records from the record holder shelves. Start the turntable and allow the pickup arm to complete its cycle.

# RCA VICTROLA MECHANISM DATA

### RP-152, RP-153, RP-155:

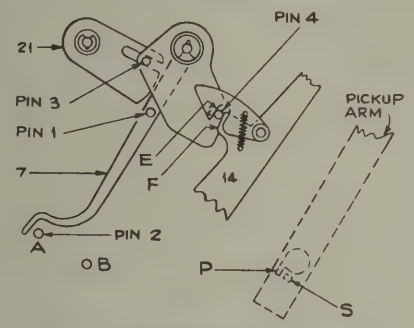
The following changes have been made in these Record Changers:

(a) Removal of Trip Regulator Lever (Part 21).

(b) Removal of Pin 1 on Trip Lever Friction Finger (Part 7).

(c) Repositioning of Stop Pin 2 from position "A" to position "B."

(d) Removal of Pin 3. Since this pin does not interfere with the operation, it has been left in some mechanisms.




*Trip Regulator Lever (21) is Removed in Some Production.*

The Trip Regulator Lever was formerly used to prevent premature tripping due to a too early return of the Trip Lever Friction Finger at the end of each changing cycle. The same result is obtained by removing the Trip Regulator Lever and repositioning the Trip Finger Stop Pin as shown in the diagram.

### Binding or Hesitation of Tone Arm:

This may be due to the following causes:

(1) Small burr on edge "E." Correction: Carefully remove burr with a fine file until edge is entirely smooth.

(2) Binding of Pin 4 between edges "E" and "F." Correction: File off edge "F" with a fine file to give just enough clearance for smooth operation.

(3) Too far an outward swing of the Pickup Arm. This causes Pin 4 to be caught in the upper curved portion of edge "F." Correction: On some models the Pick-up Arm Shaft can be rotated by loosening the nut under the motor board. Rotate sufficiently to prevent Pin 4 from riding into curved portion mentioned, when Pick-up Arm is in the outermost position.

On models where the Pick-up Arm Shaft is positioned by a locating key, it is necessary to bend Stop Guide "S" on Pick-up Arm towards Stop Ear "P" on Pick-up Arm Shaft so that the condition mentioned in the above paragraph is obtained.

## RP-152 SERIES

### No. 38304 Spindle Bearing and Washer:

**The turntable spindle bearing and washer** for the RP-152 Series automatic record changer mechanism, used in Models VA-15, V-170, V-200, V-201, V-205, V-300, and V-405, are now stocked as No. 38304.

## FLOCK FOR RP-152 TURNTABLE

Dark taupe colored flock is available as Stock No. 37952 (½ lb. package) for turntable repair on RP-152 series record changers used in Models V-170, V-200, V-201, V-205, etc. The method of applying the flock is described on page 12 of the 1938 Bound Volume.

## RP-152 RECORD CHANGER REPLACEMENT OF RUBBER TIRES

Stock No. 37873 Rubber Drive Tire

### On Turntable Drive Discs:

1. Remove old tire by stretching and pulling over drive disc edge.
2. Thoroughly clean drive disc to remove burrs or foreign particles.
3. Place new tire over the drive disc. Avoid any twisting or excessive stretching of the tire.
4. Roll disc and tire on a flat clean surface while simultaneously applying a slight downward pressure on the disc shaft. This will allow the tire to seat itself properly in the "V" shaped groove on the drive disc and take up for any uneven stretching of the rubber tire.
5. Clean rubber tire with carbon tetrochloride (Carbona),

### Centering Motor:

Should centering of the rotor be necessary, it may be accomplished quickly in the following steps:

(a) Remove the two long machine screws, and lift off plastic end cover.

(b) Loosen the two remaining screws sufficiently to permit adjustment of stator laminations.

(c) Insert a .010-inch speaker shim between the rotor and each of the four stator field poles. Rotor should now be equidistant from each pole, and accurately centered.

(d) Tighten screws and replace plastic cover.

### Stalling Going into Cycle:

The mechanism should be loaded with one record on the turntable. If stalling going into cycle takes place, it is probably due to insufficient tension in the main lever spring or booster spring (43). An additional metal washer should be inserted between the spring and its guide.

### Stalling Coming Out of Cycle:

If the mechanism stalls just as it is coming out of cycle, that is, when the pickup is at its farthest distance laterally from the turntable, it is probable that there is too much tension in the booster spring. Any metal washers in this assembly should be removed.

**CAUTION: The mechanism is designed to handle a total of 8—10-inch records or 7—12-inch records.**

### Intermittent Start, Slow Speed, or Stalling:

These conditions may be caused by binding of idler wheel on its mounting stud. Smooth and clean the idler wheel bearing so that it can rotate freely.

## QU7, QU-51, -52, -55, -56

### Tone Arm Pressure Spring:

When replacing the tone arm, or the magnetic pickup head, check the needle pressure which should be approximately 3½ ounces. Alter the counter-balance spring in arm to obtain the correct pressure, or install a new spring. Two springs (65 turns and 75 turns) are supplied under Stock No. 38213. Use the spring that most nearly gives the correct pressure and then remove turns, or stretch the spring, as required, for final adjustment.

## RP-153 RECORD CHANGER

### Motor Data:

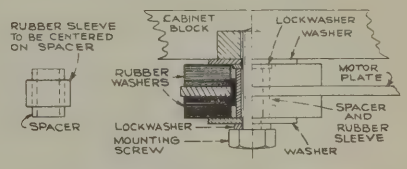
Should it be necessary to rebuild or service any of these motors in the field by replacing end heads or using new rotors and shafts, it must be noted that the rebuilt motors should be operated continuously for at least 48 hours before installation. The use of bronze bearings, diamond-bored for accuracy, together with the burnished steel shaft at the rotor provides a very close fit. As a result, the motor must be run in approximately 48 hours, after which the oil has had a chance to fairly cover all contact surfaces of shaft and bearings, and a very smooth-operating long life bearing results.

### Mechanical Motor Noise:

Mechanical motor noise due to armature end play sometimes develops with wear in the above instruments which use type RP-153 record changers. This can be eliminated by tightening the armature thrust bearings. Care should be taken to avoid making them too tight which will cause binding.

### Motor Hum:

Excessive hum may be caused by incorrect assembly of the rubber grommets on the two bolts that fasten the motor-mounting plate to the cabinet. The correct assembly is shown in the sketch. The rubber sleeve must be centered on the metal spacer so that the motor plate can not come in metallic contact with the spacer.




RP-153 MOTOR MOUNTING ARRANGEMENT

*Excessive Motor Hum will Result in RP-153 if the Rubber Sleeves are not Centered on the Metal Spacers.*

## V-170, V-200, V-201

### Rumble:

Rumble is related to motor vibration, combined with high-gain amplifier, and prominent bass response.

The vibration of the motor in these instruments is as low as it can be made: Do not replace it to correct rumble. Rather, reduce the low-frequency response by shunting a 50,000-ohm ½-watt resistor across the crystal pickup terminals.

## RUBBER BUMPER STUD

### Stock No. 38351:

The stud for the rubber bumper (adjustment "A") on RP-152, 153, 155, and similar automatic record changers, is available as Stock No. 38351.

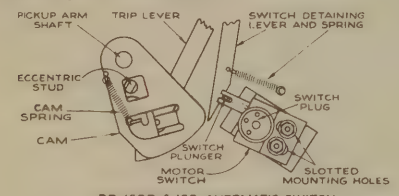
### Idler Wheel Fiber Washers:

In order to reduce idler wheel noise, the two metal washers have been replaced by two fiber washers in the Idler Wheel Assembly, Stock No. 36274, for the above record changers. The new fiber washers are Stock No. 39996.

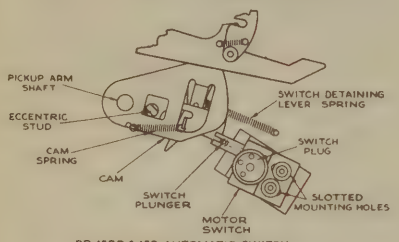
## RP-152D, -153, QU7

### Automatic Switch Adjustment:

In RP-152D and RP-153, an automatic motor switch is mounted under the motorboard, near the pickup arm shaft.




RP-152D & 153 AUTOMATIC SWITCH
(PICKUP ARM ON REST, AND INDEX LEVER AT 10" OR 12")




RP-152D & 153 AUTOMATIC SWITCH
(PICKUP ARM 1⅞" FROM SPINDLE AND INDEX LEVER AT "MANUAL")

When the index lever is set at its "10-inch" or "12-inch" position, a detaining lever holds the switch plunger in and keeps the motor running.

When the index lever is set at its "manual" position, the detaining lever moves aside and the switch plunger is then actuated by a cam on the pickup arm shaft. In "manual" position, when the pickup is on its rest, the switch plunger is out and the motor circuit is open. When the pickup is moved from its rest to the edge of a 12-inch record, the cam pushes the switch plunger in and the motor starts. When the pickup needle reaches a point 1⅞ inches from the centerline of the turntable spindle, the switch plunger is released by the sharp corner of the cam, thus shutting off the motor.

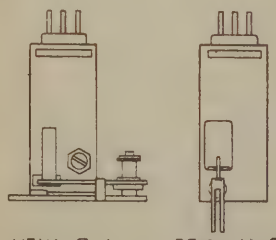
When the pickup is lifted off the record and moved to its rest, the motor starts momentarily.

**ADJUSTMENTS:**

The slotted switch mounting holes permit positioning of the switch so that the plunger will be pushed in by the cam.

The eccentric stud on the cam should be turned so that the switch plunger is released by the sharp corner of the cam when the pickup needle is 1⅞ inches from the centerline of the turntable spindle.

The original switch, Stock No. 36529, is superseded by an improved switch, Stock No. 38995. When installing the new switch, remove the angle bracket that is used between the motor board and the original switch.




*Original and new motor switch for automatic shut-off in manual operation on RP-152D and RP-153.*

## REPLACEMENT STUDS

### For Main Lever, Cam-and-Gear, or Trip Pawl:

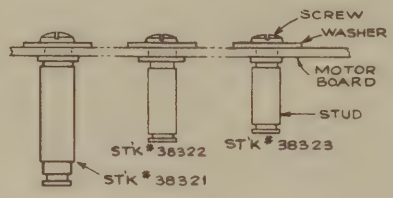
In automatic record changers of the RP-139A, 145, 152, 153, 155, and similar types, loosening of the mounting studs on which the main lever, cam-and-gear, or trip pawl are pivoted may be caused by jamming of the main lever against the pawl pin at the end of the change cycle due to one or more of the following reasons:

(a) The long arm of the main lever slides over the thin pawl pin instead of pushing against it during first half of cycle. **Check for bent arm on main lever.**

(b) After being cleared out of the way, the trip pawl bounces back due to vibration (dancing near mechanism, etc.) **Check the trip-pawl phosphor-bronze spring for sufficient "drag" or pressure against the pawl.**

(c) **The index lever is put into "REJECT" position while the mechanism is still in its change cycle.** Caution customer against this.

Loose studs may be quickly and easily replaced by using special replacement studs that are fastened to the motorboard by means of a screw and washer. Three different studs are available:




| Stock No. | |
|---|---|
| 38321 | Main Lever replacement stud, with screw and washer... |
| 38322 | Cam-and-Gear replacement stud, with screw and washer. |
| 38323 | Trip Pawl replacement stud, with screw and washer... |

## VHR-202, 207, 407

### Follower-Arm Weight:

*Three Mounting Arrangements of Follower-Arm Weight on Home Recording Models*

The weight is packed separately for methods "A" and "B" and must be mounted as shown when the instrument is installed in the consumer's home. Excessive "rumble" occurs when the weight is not in place.

## RP-152, -152A

### Tendency to Stall:

Some RP-152 and -152A automatic record changer mechanisms in Model VA-15, V-170, V-200, and V-201 use a motor identified by stamping number 91706-1. Slow speed and tendency to stall in this motor may be due to the motor bearings becoming misaligned with respect to the motor spindle.

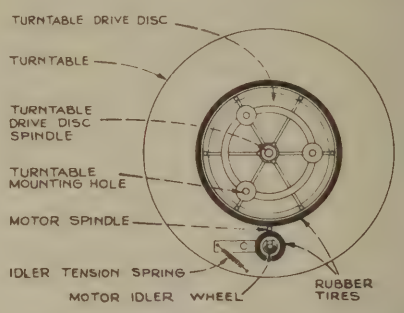
In most cases, the motor spindle may be freed by tapping the stator laminations while the motor is in operation.

For a permanent remedy it is advisable to install an idler wheel assembly to reduce side thrust on the motor bearings. The following parts are required:

| Stock No. | Description | Unit List Price |
|---|---|---|
| 1—36274 | Idler wheel..... | .55 |
| 1—36275 | Idler wheel arm..... | .25 |
| 2—33726 | "C" washer for idler wheel | .02 |
| 1—30585 | Spring for idler..... | .06 |

Installation Instructions:

1. Remove one of the two motor support springs.




*Arrangement of Idler Wheel Assembly to Improve RP-152, -152A Using Motor 91706-1*

2. Remove the turntable by removing the screw in the turntable spindle drive gear below the motorboard.
3. Mount the idler wheel by means of a "C" washer on the single end stud of the idler arm.
4. Install the idler assembly in place on the motor board as shown in accompanying sketch and fasten by means of the second "C" washer.
5. Connect the tension spring between the end of the idler arm and the motorboard pin (below motorboard).

## PHONOGRAPH MOTORS

### Identifying Colors:

In order to facilitate identification in respect to frequency, Phonograph motors are marked either on the bottom or side with a large spot of paint as follows:

**60 cycles**..... no mark
**50 cycles**..... green
**25 cycles**..... white

## RP-155 and RP-157

**The turntable** can be removed by tapping smartly on the top of the spindle while pulling upward on opposite sides of the turntable.

**Record-Separating Knives.** 12-inch records are thicker than 10-inch records: To accommodate this difference, the "knife" or record-separating lever on each record post is raised slightly when a 12-inch record presses down against the ball-point screw that projects through a hole in the record-holder shelf on each post. (10-inch records do not rest on these screws, and the knife clearance is then correct for a 10-inch record.)

**Lubrication.**—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, lead screw and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, motor bearing, record post bearings, and all other bearings of various levers and pulleys on underside of motorboard and underneath turntable.

# VHR-202, -207, -307, -407 Recorder Mechanism Adjustments

**"N" Recorder Arm Stop.**—An extension on the cross-bracket under the motorboard limits the inward movement of the follower arm. In this stop position, the stylus screw should be 1½ inches from the spindle.

The correct distance can be obtained by loosening set screws "N," moving the recorder arm in the required direction, and tightening the set screws.

**"O" Follower-Arm Guide Adjustment.**—When the recorder arm is lifted, the follower-arm rises up so that the follower-guide will clear the lead screw and permit the recording arm to be moved inward or outward.

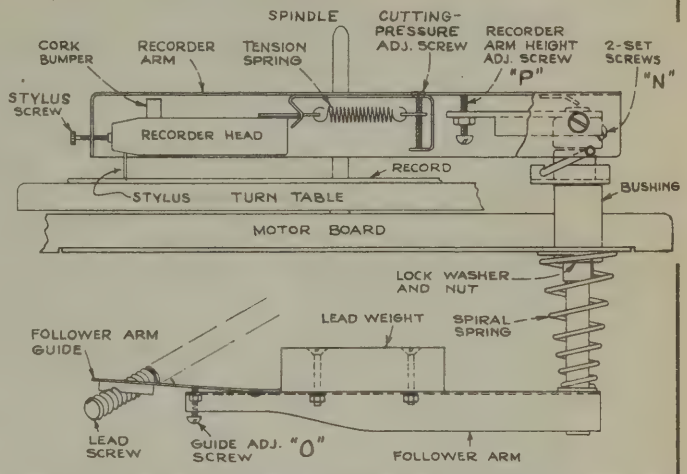
Adjust the set screw and locknut "O" so that the guide clears the lead screw when the bottom-front edge of recorder arm is 3 inches above record.

**"P" Recorder-Arm Height Adjustment.**—With the recording stylus resting on a metal-base recording disc, and adjusted for correct cutting pressure, the stylus screw should be approximately in the center of the hole in the recorder arm, and the cutter head should be free to move up and down. Adjust the recorder-arm height adjustment screw and locknut "P" to obtain these conditions.

If the arm is too low, the cork bumper on top of the cutter head will hit the inner top of recorder arm.

If the arm is too high, the stylus screw will hit the lower edge of the screw hole.

Also check to see that the stylus screw does not scrape against the side of the screw hole.




**"Rumble":**

Any instrument with the sensitivity and tone response of these home recorders is capable of picking up the mechanical vibrations of the motor. However, due to many preventives incorporated in the design of these instruments, rumble will not be recorded if the following precautions are observed:

**LEVELING**—See that the instrument is perfectly level.

**FREENESS**—Be certain that the motorboard and mechanism is "floating" free from the cabinet. All four mounting springs should be at approximately equal tension.

**FOLLOWER ARM DAMPING WEIGHT**—See that the lead weight is in place attached to the follower arm underneath the motorboard.

**STYLUS**—Make sure that a perfect stylus is tightly inserted in the cutter-head. Because both stylus and retaining screw are of hard steel there is a tendency towards loosening during cutting. Tightness should be checked before each cut.

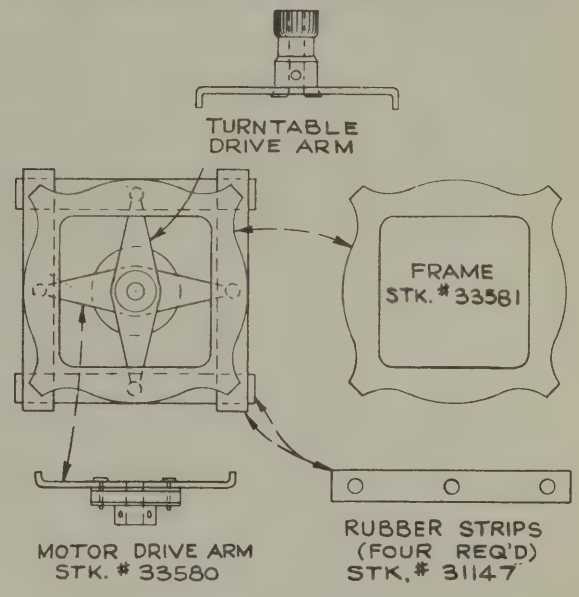
**INPUT LEVEL**—Set for sufficient input level so that the "Magic Eye" just closes on modulation peaks.

**TONE CONTROL SETTINGS**—During recording, the power-bass control should be set for maximum lows, just beyond the click of power switch. The treble tone control setting will depend on the degree of potential rumble present. For extreme cases, it should be set for minimum highs during recording only, in order that the low frequencies in the selection or voice may have a full chance to mask any possible rumble.

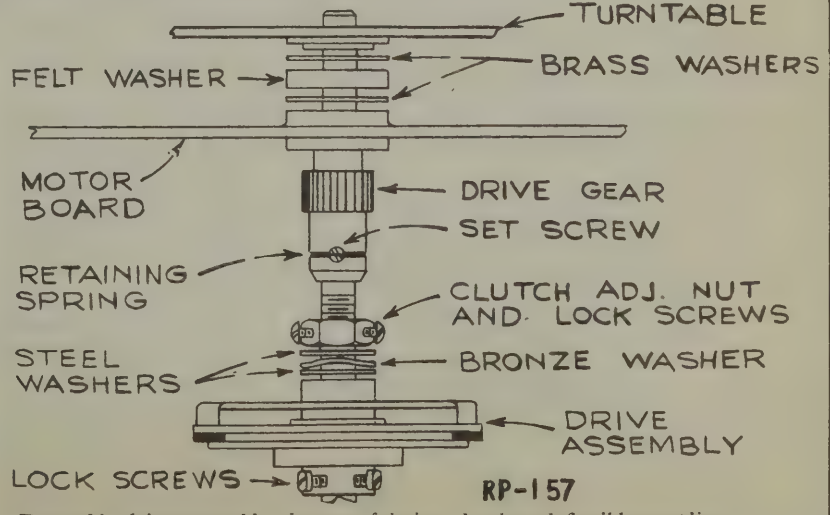
**DEPTH OF CUT**—During recording, the shavings should be directed towards the spindle and prevented from obstructing the cutter path. The thickness of these shavings should be about that of human hair, or approximately .003 inches. An additional check on depth of cut is to inspect the recording under a magnifying glass. The groove width should approach but not exceed the distance between grooves. Depth of cut may be varied by means of the cutting-pressure adjusting screw at the top of cutter arm.

**TURNTABLE DRIVE**—If rumble persists, inspect the idler wheel (between motor spindle and turntable) for possible runout, flat spots, and scraping against bottom of turntable.

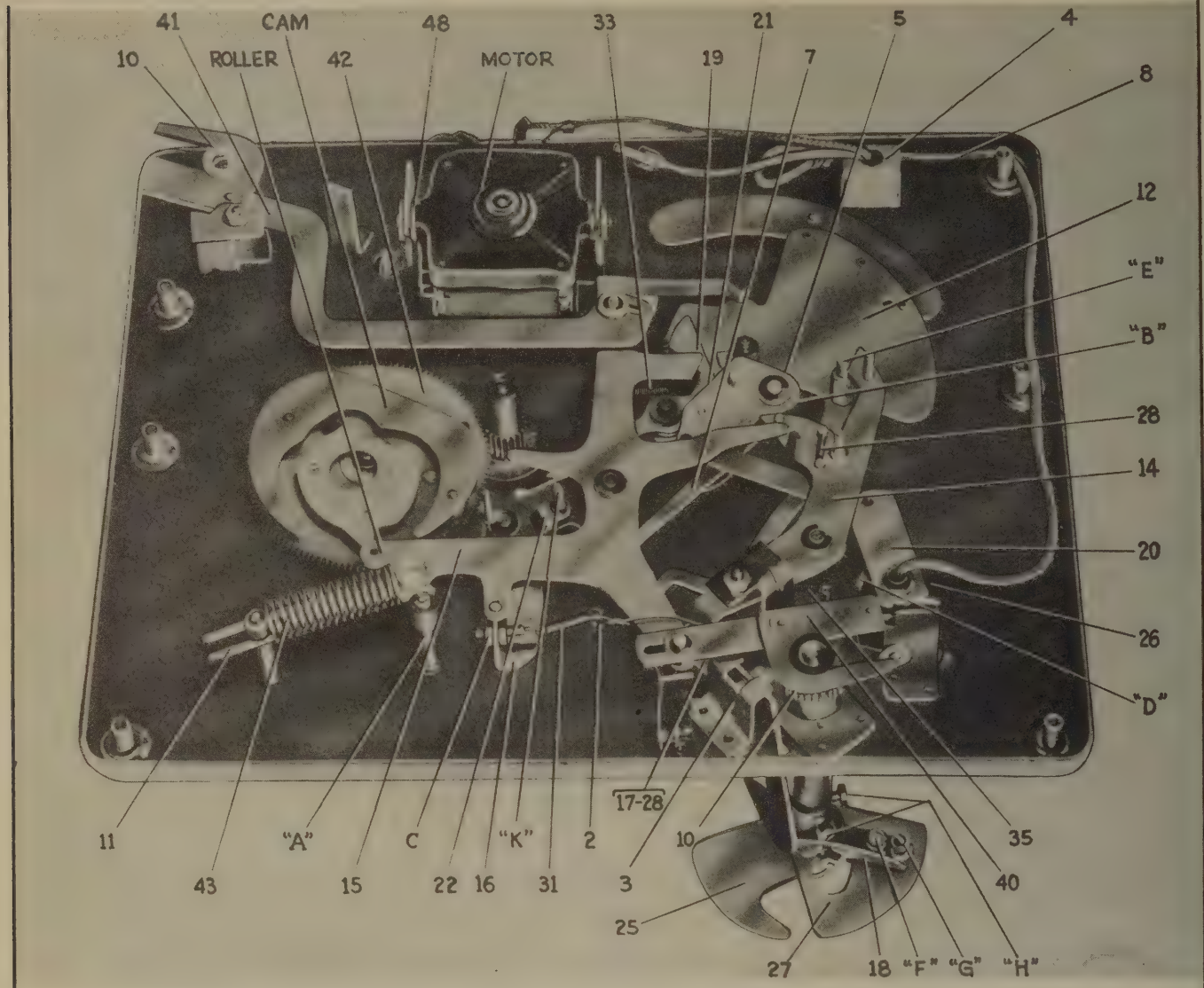
**RECORDING DISCS**—Due to variations in material composition and hardness among different types of discs, the same cutting-pressure adjustment will not give an equal depth of cut on all types. Thus, it may be necessary to change the adjustment previously set for one type of disc, when recording on a different type.




*Motor Coupling Details on RP-153*




*Turntable drive assembly showing friction clutch and flexible coupling.*




*Bottom View of RP-152, -A, -B, -C, -J Automatic Record Changer*

RP-153 mechanisms are similar to above but have flexible coupling turntable drive, and automatic switch.

RP-152-D mechanisms are similar to above but include automatic switch.

**Note: Numbers refer to parts—letters refer to adjustments.**

## Names of Mechanism Adjustments

**"A" Rubber Bumper.**—Maintains 1/16-inch clearance between roller (on end of main lever) and cam plate.

**"B" Friction Clutch Adjustment.**—Regulates tripping of record-changing cycle when pickup swings in eccentric groove.

**"C" Pickup Lift-Cable Adjustment.**—Regulates height that pick-up arm is lifted during record-changing cycle.

**"D" Needle Landing Position for 10-inch Records.**—The relation between pickup shaft and trip lever "20," which are fastened by set screws "D," determines needle landing position for 10-inch records.

**"E" Needle Landing Position for 12-inch Records.**—Eccentric stud "E" adjusts position of lever "14" which determines landing position for 12-inch records.

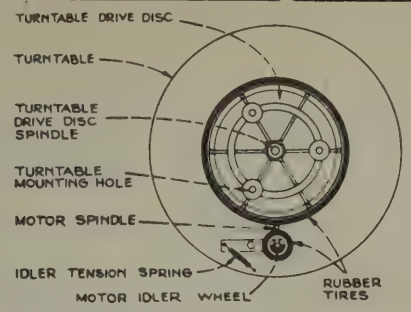
**"F" Record separator knife adjustment for 10-inch records,** adjusts spacing of knife with relation to record shelf so knife will accurately slice in between the bottom 10-inch record and the rest of the stack.

**"G" Record separator knife adjustment for 12-inch records,** adjusts movement of elevating lever which raises knife to compensate for greater thickness of 12-inch records.

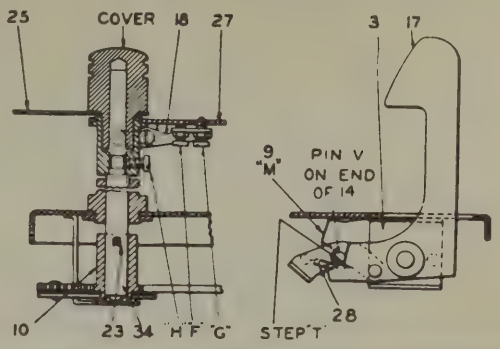
**"H" Record support shelf set screws,** to adjust record support self on each record post, so the shelves move out from under the bottom record at the same instant, permitting record to drop properly.

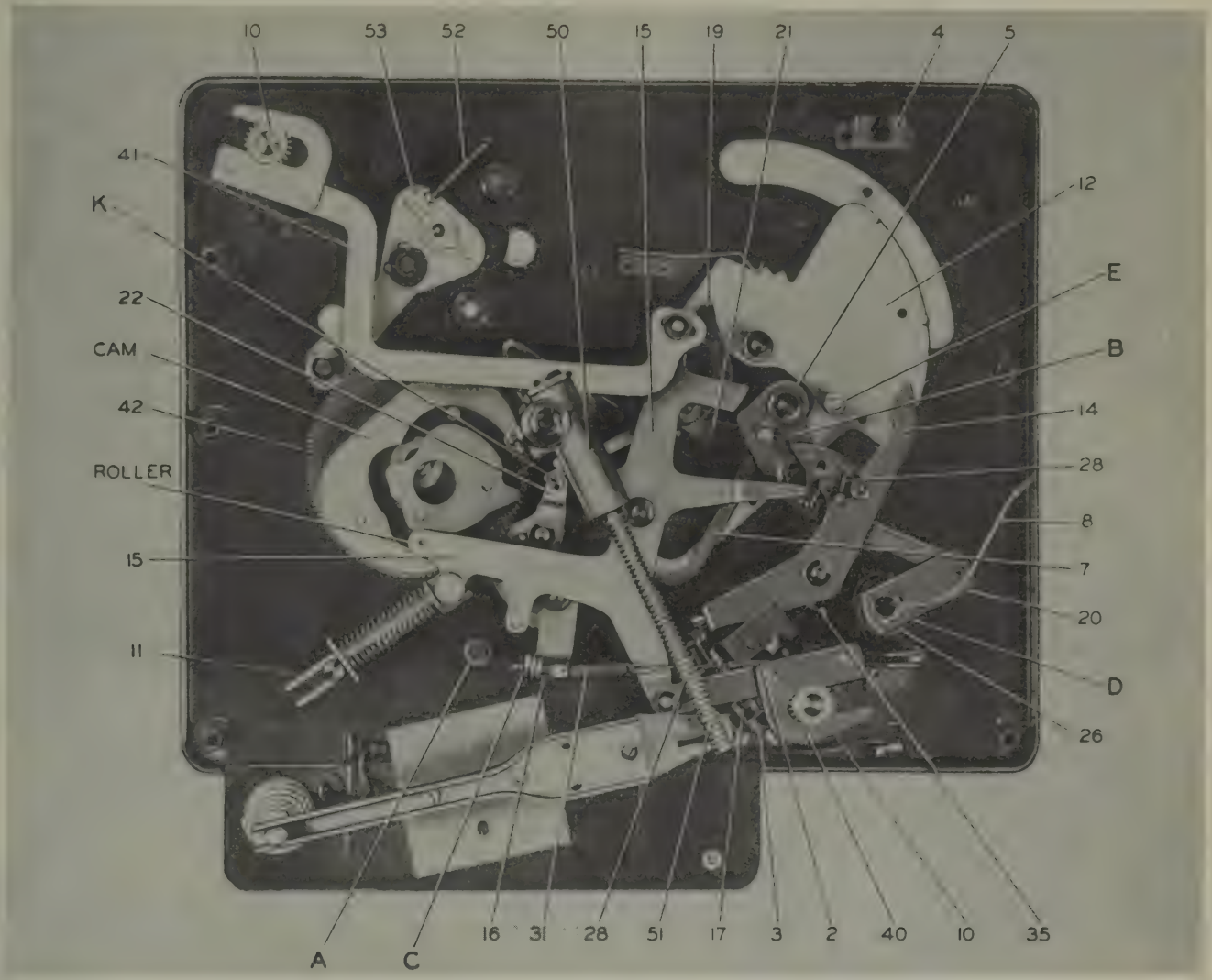
**"K" Trip-pawl stop pin,** regulates point at which the roller on main lever enters the cam.

**"Record Discriminating Lever."** In playing a mixed group of 10-inch and 12-inch records, the index lever is set at "10." When the pickup arm moves out during the cycle of operation, the record discriminating lever (at left of the rear record-holder post) is moved to its forward position, toward the spindle, and sets the correct landing position of the pickup needle for a 10-inch record. If a 12-inch record drops down, it pushes the record discriminating lever back, and sets the correct landing position for the 12-inch record.




*Motor Drive Details on RP-152*




## RP-155 Names of Mechanism Parts

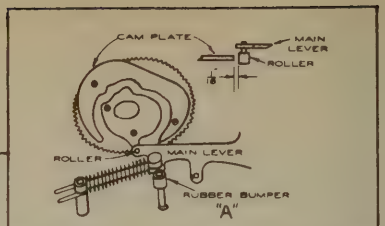
| | | |
|---|---|---|
| 2 | **Guide** | —Pickup-lift-cable guide. |
| 3 | **Bracket** | —Record-discriminating-lever bracket. |
| 4 | **Switch** | —Turntable motor switch. |
| 5 | **Clutch** | —Trip-lever friction clutch. |
| 7 | **Finger** | —Trip-lever friction finger. |
| 8 | **Cable** | —Pickup shielded cable. |
| 9 | **Spring** | —Record-discriminating-lever spring (flat). |
| 10 | **Gear** | —Record-separator-shaft gear. |
| 11 | **Guide** | —Main-lever-spring guide. |
| 12 | **Lever** | —Index lever. |
| 14 | **Lever** | —Locating lever and pawl. |
| 15 | **Lever** | —Main lever. |
| 16 | **Lever** | —Pickup lift-cable lever. |
| 17 | **Lever** | —Record-discriminating lever and pawl. |
| 18 | **Lever** | —Record-separator elevating lever. |
| 19 | **Lever** | —Trip-detaining lever. |
| 20 | **Lever** | —Trip lever. |
| 21 | **Lever** | —Trip-regulator lever. |
| 22 | **Pawl** | —Trip pawl. |
| 23 | **Pin** | —Separator-shaft pin (engages gear). |
| 25 | **Separator** | —Record-separator knife. |
| 26 | **Spring** | —Pickup-arm starting spring. |
| 27 | **Shelf** | —Record-support shelf. |
| 28 | **Spring** | —Record-discriminating-lever pawl spring, or locating-lever pawl spring. |
| 31 | **Spring** | —Pickup lift-cable spring. |
| 34 | **Shaft** | —Record separator shaft. |
| 35 | **Spring** | —Locating-lever spring. |
| 40 | **Gear** | —Short arm and rack gear. |
| 41 | **Gear** | —Long arm and rack gear. |
| 42 | **Cam** | —Cam and drive gear assembly. |
| 43 | **Spring** | —Main-lever spring. |
| 50 | **Casting** | —Casting and bearing for spindle and lead screw. |
| 51 | **Screw** | —Lead screw and pinion gear for recorder drive. |
| 52 | **Spring** | —Tension spring for motor idler pulley arm. |
| 53 | **Arm** | —Motor drive disc arm. |

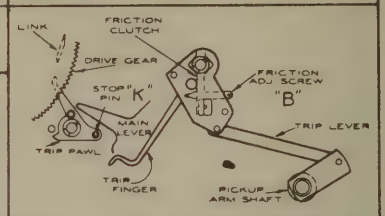
RP-152, RP-153, RP-155, RP-157

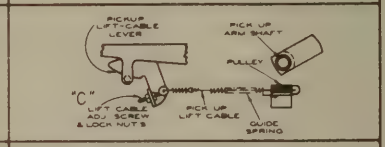
## *Quick-Reference Chart for*

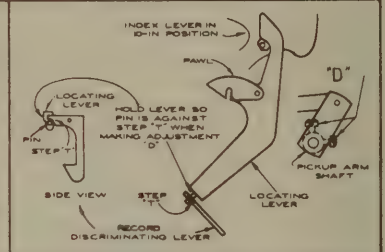
# Automatic Record Changer Adjustments

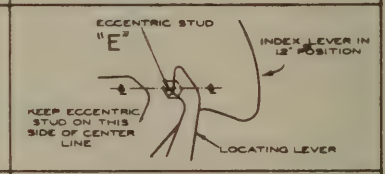
| | |
|---|---|
| *General irregularity of operation.* | With changer "out-of-cycle," the roller on main lever should clear the cam plate by 1/16-inch. Bend the rubber bumper stud, if necessary, to obtain this clearance. |
| *Fails to trip at end of record.* | **Increase** clutch friction by turning clutch screw clockwise. |
| *Needle repeats grooves (does not follow the groove).*<br><br>*Change cycle starts before record is finished.* | **Decrease** clutch friction by turning clutch screw counter-clockwise. These troubles may also be caused by a defective record, binding of the pickup-arm bearing, twisted pickup output cable, or rubbing between the friction finger and the index-lever finger. |
| *Pickup arm strikes lower record in stack.*<br><br>*Pickup needle drags across top record on turntable.* | Rotate the changer "in-cycle" to the point where the pickup arm is raised to its maximum height above turntable plate, and has not started to move outward. Adjust the lift-cable screw and locknuts so needle point is 1-inch above top surface of turntable. |
| *Needle doesn't land at correct point on 10-inch record.*<br>*(The correct landing point is 4-5/8 inches from the nearest side of the turntable spindle).* | Place 10-inch record on turntable, push record-discriminating lever to forward position, push index lever to "reject" and return it to "10." Rotate mechanism through cycle until needle is just ready to land on record. Hold pin on locating lever against step "T" as shown, loosen the two set screws at pickup arm shaft, and move pickup so needle is about 1/32-inch beyond the outer groove of record. See that there is 1/32-inch play between the pickup-arm bearing and set-screw collar, then tighten one (the blunt nose) set-screw.<br>Run mechanism through cycle as a check, and then tighten the cone-pointed set screw. |
| *Needle doesn't land at correct point on 12-inch record.*<br>*(The correct landing point is 5-5/8 inches from nearest side of spindle).* | Adjust for correct 10-inch landing, as described above, then place 12-inch record on turntable, push index lever to "reject" and return it to "12." Rotate mechanism through cycle until needle is ready to land on the record. Turn eccentric stud to bring pickup needle about 1/32-inch beyond the outer groove in record. (Keep eccentric on stud toward rear of motorboard as indicated.) |
| *Record knives strike edge of records.*<br>*(This is generally due to warped records, and records with rough edges).* | It is essential that the spacing between the knife and the record shelf "27" be accurately maintained. The spacing for the 10-inch record is nominally .058 inch, and for the 12-inch record is .075 inch.<br>To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F," adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch. |
| *Records are not released properly, or do not fall flat.*<br>*(If record shelves are bent, or not perfectly horizontal, improper operation and jamming of mechanism will result).* | Place a 12-inch record on the turntable, rotate mechanism to point in cycle where the shelves have turned clockwise as far as the mechanism will turn them. Lift record up so it is in contact with both knives and check clearance between record and edges of shelves. It should be 1/16-inch as shown. If the clearance at either or both shelves is not correct, loosen set screws "H" and shift the shelves to obtain this clearance, with the backlash taken up by pressing the shelves toward the record. Tighten one set screw (the blunt-nose one), run mechanism through cycle several times to check action, then tighten the other (cone-pointed) set screw. |
| *Pickup arm support bent too low, or too high.* | Bend the support (which is associated with the pickup arm bearing, so that with the mechanism out of cycle, the lower front edge of the pickup arm is 5/16-inch above surface of motorboard. |
| *Roller on main-lever won't enter cam.* | Bend the trip pawl stop pin so that the roller on end of main lever, when entering the cam, will definitely clear the cam outer guide plate as well as the nose of the cam plate. (Adjustment "K.") |
| *Needle lands in 10-inch position on 12-inch record, or misses record when playing both types mixed.* | Increase pressure of flat spring "M" at bottom of record discriminating lever. |
| *Needle fails to enter starting groove.* | Raise the right-hand side of cabinet by placing thin spacers under legs. |
| *Needle slides over a few grooves in landing.* | Raise the left-hand side of cabinet by placing thin spacers under the legs. |

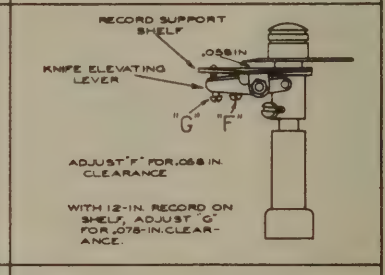


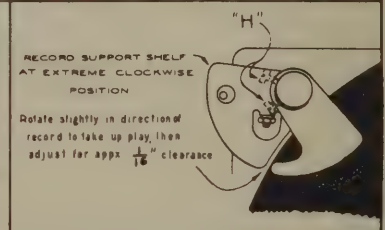





"H"
RECORD SUPPORT SHELF AT EXTREME CLOCKWISE POSITION
Rotate slightly in direction of record to take up play, then adjust for appx 1/16" clearance

# Replacement Parts Model RP-152

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| | (RP-152) |
| 33906 | Arm—Pickup arm only—less crystal, cable, and pivot arm |
| 36320 | Arm—Pickup pivot arm and shaft—less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pickup pivot arm |
| 32635 | Cable—Pickup lift cable |
| 35694 | Cable—Pickup shielded cable (8) |
| 35171 | Crystal—Pickup crystal cartridge and needle screw |
| 33529 | Screw—Pickup needle screw |
| | (RP-152-A) |
| 36321 | Arm—Pickup arm only—less crystal, cable, and pivot arm |
| 36320 | Arm—Pickup pivot arm and shaft—less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pickup pivot arm |
| 32635 | Cable—Pickup lift cable |
| 35694 | Cable—Shielded pickup cable (8) |
| 35171 | Crystal—Pickup crystal cartridge and needle screw |
| 33974 | Screw—Pickup needle screw |
| | (RP-152-B) |
| 36322 | Arm—Pickup arm only—less crystal, cable, and pivot arm and shaft |
| 30320 | Arm—Pickup pivot arm and shaft — less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pickup pivot arm |
| 32635 | Cable—Pickup lift cable |
| 35694 | Cable—Pickup shielded cable |
| 37158 | Crystal—Pickup crystal cartridge and needle screw |
| 33529 | Screw—Pickup needle screw |
| | (RP-152-C) |
| 36591 | Arm—Pickup arm shell only |
| 36320 | Arm—Pickup pivot arm and shaft—less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pickup pivot arm |
| 32635 | Cable—Pickup lift cable |
| 32556 | Cable—Shielded pickup cable |
| 35171 | Crystal—Pickup unit crystal cartridge |
| 33974 | Screw—Needle screw |
| | (RP-152-D) |
| 37181 | Arm—Pickup arm (shell only) |
| 36320 | Arm—Pickup pivot arm and shaft—less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pivot arm |
| 32635 | Cable—Pickup lift cable |
| 33905 | Crystal—Pickup crystal cartridge |
| 33976 | Pin—Support pin used to fasten arm shell to pivot arm |
| 33529 | Screw—Needle screw |
| | (RP-152-J) |
| 36322 | Arm—Pickup arm (shell only) |
| 36320 | Arm—Pickup pivot arm and shaft — less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pivot arm |
| 32635 | Cable—Pickup lift cable |
| 35694 | Cable—Shielded pickup cable to shorting switch |
| 37158 | Crystal—Pickup crystal cartridge |
| 33976 | Pin—Used to attach pickup arm to pivot arm |
| 33529 | Screw—Needle screw |
| | **MOTOR ASSEMBLIES** |
| | (110 volts, 60 cycles)<br>(Motor No. 91706-1)<br>(RP-152 — RP-152-A) |
| | NOTE: For complete 110 volts, 60 cycle motor replacement order:<br>1—Stock No. 36254 Motor—with capacitor<br>1—Stock No. 36274 Idler wheel<br>1—Stock No. 36275 Idler wheel arm<br>2—Stock No. 33726 "C" washer for idler wheel<br>1—Stock No. 30585 Spring for idler |
| 37108 | Bearing—Bottom bearing and bracket |
| 37107 | Bearing—Top bearing and bracket |
| 37109 | Bracket—Motor mounting bracket |
| 37111 | Coil—Motor field coil assembly |
| 37110 | Rotor—Motor rotor complete with fan |
| 37106 | Pad—Rotor thrust pad |
| | **MOTOR ASSEMBLIES** |
| | (Motor, No. 91655-1, 2, and 3) |
| 36954 | Armature—Motor armature and shaft for 25 cycle motor |
| 36953 | Armature—Motor armature and shaft for 50 cycle motor |
| 36255 | Armature—Motor armature and shaft for 60 cycle motor |
| 36952 | Cap—Bakelite cap for motor |
| 36955 | Capacitor—1.1 mfd. for 60 cycle motor |
| 36951 | Capacitor—1.25 mfd. for motors (1 required for 50 cycles) (2 required for 25 cycles) |
| 36726 | Motor—105-125 volts, 25 cycle, complete with capacitor |
| 36725 | Motor—105-125 volts, 50 cycle, complete with capacitor |
| 36254 | Motor—105-125 volts, 60 cycle, complete with capacitor |
| | **MOTORBOARD ASSEMBLIES** |
| 36259 | Base—Pickup arm mounting base—RP-152 only |
| 36378 | Base—Pickup arm mounting base—RP-152-A, RP-152-B, and RP-152-J only |
| 36542 | Base—Pickup arm mounting base—RP-152-C only |
| 36811 | Base—Pickup arm mounting base—RP-152-D only |
| 36257 | Board—Motorboard complete with bearings and posts—less operating parts—RP-152 only |
| 36375 | Board—Motorboard complete with bearings and posts—less operating parts—RP-152-A, RP-152-B, and RP-152-J |
| 36256 | Board—Motorboard complete with bearings and posts—less operating mechanisms—RP-152-C only |
| 36813 | Board—Motorboard with welded and riveted studs and bearing — less operating parts — RP-152-D only |
| 32556 | Cable—Shielded pickup cable and plug, connects to shorting switch |
| 36262 | Cup—Used needle (insert only for pickup rest) —RP-152, RP-152-A, RP-152-B, RP-152-C and RP-152-J) |
| 36518 | Cup—Used needle cup (insert for pickup rest) —RP-152-D only |
| 36258 | Escutcheon—Index escutcheon — RP-152, RP-152-A, RP-152-B, RP-152-C and RP-152-J |
| 36377 | Escutcheon—Index escutcheon—RP-152-D only |
| 36260 | Gauge—Pickup needle gauge |
| 34368 | Grommet—Rubber grommet for motor mounting |
| 36263 | Plate—Turntable shaft support and spring plate |
| 30870 | Plug—2-contact male for motor leads |
| 31048 | Plug—Plug for pickup leads—RP-152-D only |
| 36281 | Rest—Pickup arm rest—RP-152 only |
| 36379 | Rest—Pickup arm rest—RP-152-A, RP-152-B and RP-152-J |
| 36812 | Rest—Pickup arm rest—RP-152-D only |
| 36543 | Rest—Pickup arm rest—RP-152-C only |
| 36798 | Spring—Index lever spring (riveted to motor-board) |
| 32875 | Switch—Motor switch (4) |
| | **OPERATING MECHANISMS** |
| 36275 | Arm—Motor idler wheel arm and studs—less wheel—for use with motor marked No. 91655 |
| 10129 | Ball—Steel ball for spindle shaft |
| 33984 | Bracket—Bracket and pin for locating post and lever (3) |
| 36277 | Bumper—Main lever rubber bumper |
| 33987 | Cam—Cam and drive gear complete (42) |
| 36531 | Cam—Trip lever cam and link—RP-152-D only |
| 36266 | Clutch—Trip lever clutch—less adjusting stud (5) |
| 36282 | Disc—Turntable drive disc, rubber tire, and spindle shaft assembled—less turntable finished plate |
| 36265 | Finger—Trip lever friction finger (7) |
| 31121 | Gear—Record separator shaft gear (10) |
| 36280 | Gear—Turntable shaft drive gear |
| 33982 | Guide—Main lever spring guide (11) |
| 31151 | Guide—Pickup lift cable guide (spring) (2) |
| 36264 | Lever—Index lever—RP-152 only (12) |
| 36380 | Lever—Index lever—RP-152-A, RP-152-B, and RP-152-J |
| 36545 | Lever—Index lever—RP-152-C only |
| 36816 | Lever—Index lever—RP-152-D only |
| 36273 | Lever—Locating lever and pawl—RP-152, RP-152-A, RP-152-B and RP-152-J |
| 31138 | Lever—Locating lever and pawl—RP-152-C and RP-152-D (14) |
| 33985 | Lever—Main lever (15) |
| 31140 | Lever—Pickup lift cable lever and spring (16) |
| 36814 | Lever—Pickup discriminating lever and pawl—RP-152-D only |
| 36272 | Lever—Record discriminating lever and pawl—RP-152 only (17) |
| 36381 | Lever—Record discriminating lever and pawl—RP-152-A, RP-152-B, and RP-152-J |
| 36544 | Lever—Record discriminating lever and pawl—RP-152-C only |
| 36476 | Lever—Record separator elevating lever with adjustment screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 36530 | Lever—Trip lever — less cam and link — RP-152-D only |
| 36284 | Lever—Trip lever—less friction finger and clutch —RP-152, RP-152-A, RP-152-B, RP-152-C, and RP-152-J (20) |
| 36525 | Link—Index link assembly—RP-152-D only |
| 31133 | Pawl—Trip pawl (22) |
| 36268 | Pin—Pin to fasten gear to separator shaft (23) |
| 36267 | Rack—Long arm and gear (41) |
| 32880 | Rack—Short arm and gear (40) |
| 36281 | Ring—Retaining ring for set screw in turntable drive gear |
| 36477 | Screw—No. 6-32 ball point screw for record separator elevating lever |

## Replacement Parts Model RP-152 (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 36276 | Screw—No. 6-32 x ¼ cup point set screw for turntable drive gear |
| 31118 | Screw—No. 10-32 x 5/16 cone pointed set screw for record separator shelf ("H") |
| 32869 | Screw—No. 10-32 x 5/16 machine screw for record separator shelf |
| 4563 | Screw—Pickup lift cable adjusting screw |
| 33983 | Screw—Record separator elevating lever point screw |
| 36270 | Separator—Record separator knife—RP-152 and RP-152-A only |
| 33990 | Separator—Record separator knife—RP-152-B, RP-152-J and RP-152-D (25) |
| 34775 | Separator—Record separator knife — RP-152-C only |
| 33988 | Shaft—Record separator shaft (34) |
| 36269 | Shelf—Record separator rotating shelf—less set screw—RP-152, RP-152-A, and RP-152-C |
| 33989 | Shelf—Record separator rotating shelf—less set screws—RP-152-B, RP-152-D, and RP-152-J (27) |
| 36269 | Shelf—Record separator rotating shelf—less set screws—RP-152-C only |
| 33994 | Spring—Flat spring for record discriminator lever |
| 32882 | Spring—Main lever spring (43) |
| 36580 | Spring—Motor tension spring, for use with motor No. 91706-1 — RP-152, RP-152-A, RP-152-B, RP-152-C, and RP-152-J |
| 36278 | Spring—Pickup arm feed spring |
| 3666 | Spring—Pickup lift cable spring (31) |
| 14190 | Spring—Record discriminating lever pawl spring (28) |
| 3676 | Spring—Tension spring for cam pawl |
| 30585 | Spring—Tension spring for idler assembly, for use with motor marked No. 91655 |
| 32436 | Spring—Tension spring for locating lever and pawl (35) |
| 31136 | Spring—Tension spring for roller index link—RP-152-D only |
| 36921 | Spring—Tension spring for trip detaining lever. |
| 36279 | Spring—Tension spring for trip pawl |
| 36271 | Stud—No. 4-40 hex stud for trip lever clutch adjustment |
| 36529 | Switch—Automatic switch—RP-152-D only |
| 34875 | Switch—Pickup shorting switch—RP-152, RP-152-A, RP-152-B, RP-152-C, and RP-152-J. |
| 36283 | Turntable—Finished top plate only — RP-152, RP-152-A, RP-152-B, RP-152-C, and RP-152-J |
| 36815 | Turntable—Finished top plate only—RP-152-D only |
| 31608 | Washer—"C" washer for roller index link — RP-152-D only |
| 33726 | Washer—"C" washer for motor idler—for use with motor marked No. 91655 |
| 8078 | Washer—Spring washer for mounting record discriminator lever |
| 2917 | Washer—Spring washer for mounting levers |
| 36274 | Wheel—Motor idler wheel and bearing — less arm—for use with motor marked No. 91655. |

## Replacement Parts Model RP-153

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| 36513 | Arm—Pickup arm shell only |
| 36320 | Arm—Pickup support and pivot arm |
| 34550 | Bushing—Rubber bushing for pickup pivot arm |
| 32835 | Cable—Pickup lift cable |
| 33905 | Crystal—Pickup crystal cartridge and needle screw |
| 33976 | Pin—Pickup arm shell mounting pin |
| | **MOTOR ASSEMBLIES** |
| 37300 | Armature—Motor armature and worm gear for 50 cycle motor |
| 37298 | Armature—Motor armature and worm gear for 60 cycle motor |
| 37303 | Bearing—Fibre insert for motor spindle bottom bearing |
| 37296 | Motor—105-120 volts, 50 cycles |
| 37295 | Motor—105-120 volts, 60 cycles |
| 37299 | Spindle—Motor spindle and fibre gear for 50 cycle motor |
| 37297 | Spindle—Motor spindle and fibre gear for 60 cycle motor |
| 37304 | Support—Motor mounting support plate |
| 37301 | Washer—"C" washer for motor armature shaft (thrust bearing) |
| 37302 | Washer—Felt washer for motor armature shaft (thrust bearing) |
| | **MOTORBOARD ASSEMBLIES** |
| 36516 | Base—Pickup arm mounting base |
| 36514 | Board—Motorboard complete with bearings and posts—less operating parts |
| 36517 | Brace—Motorboard strain brace |
| 32556 | Cable—Shielded pickup cable and plug, connects to shorting switch |
| 36518 | Cup—Used needle cup |
| 36377 | Escutcheon—Index escutcheon |
| 36280 | Gauge—Pickup needle gauge |
| 30870 | Plug—2-contact male for motor leads |
| 31572 | Plug—Female, for switch leads |
| 36515 | Rest—Tone arm rest and needle cup holder |
| 36798 | Spring—Index lever spring (riveted to motorboard) |
| | **OPERATING MECHANISM** |
| 34009 | Arm—Motor coupling arm and gear—turntable end |
| 33580 | Arm—Motor coupling arm and hub—motor end |
| 33984 | Bracket—Bracket and pin for locating post and lever (3) |
| 36277 | Bumper—Main lever rubber bumper |
| 33987 | Cam—Cam and drive gear complete (42) |
| 36531 | Cam—Trip lever cam and link—less trip lever |
| 36266 | Clutch—Trip lever clutch—less adjusting stud (5) |
| 36265 | Finger—Trip lever friction finger (7) |
| 33581 | Frame—Motor coupling frame only |
| 31121 | Gear—Record separator shaft gear (10) |
| 33982 | Guide—Main lever spring guide (11) |
| 31151 | Guide—Pickup lift cable guide (spring) (2) |
| 14188 | Screw—No. 10-32x7/16 set screw for motor coupling |
| 4563 | Screw—Pickup lift cable adjusting screw |
| 36528 | Separator—Record separator knife (25) |
| 33988 | Shaft—Record separator shaft (34) |
| 36527 | Shelf—Record separator rotating shelf (27) |
| 36524 | Spindle—Turntable spindle |
| 33994 | Spring—Flat spring for record discriminator lever |
| 32882 | Spring—Main lever spring (43) |
| 36278 | Spring—Pickup arm feed spring |
| 3666 | Spring—Pickup lift cable spring (31) |
| 14190 | Spring—Record discriminating lever pawl spring (28) |
| 31136 | Spring—Tension spring for automatic switch plunger |
| 3676 | Spring—Tension spring for cam pawl |
| 32436 | Spring—Tension spring for locating lever and pawl (35) |
| 36521 | Spring—Tension spring for trip lever cam |
| 36921 | Spring—Tension spring for trip detaining lever. |
| 36279 | Spring—Tension spring for trip pawl |
| 31147 | Strip—Complete set of rubber strips for motor coupling |
| 36271 | Stud—No. 4-40 hex stud for trip lever clutch adjustment |
| 36529 | Switch—Automatic switch |
| 34875 | Switch—Pickup shorting switch |
| 36523 | Turntable—Turntable less spindle shaft |
| 8078 | Washer—Spring washer for mounting record discriminating lever |
| 2917 | Washer—Spring washer for mounting levers |
| 31608 | Washer—Spring washer to hold index link |
| 31143 | Washer—Washers for turntable bearing (1 steel, 1 bronze and 1 felt) |
| 36520 | Lever—Index lever (12) |
| 36270 | Lever—Locating lever and pawl |
| 33985 | Lever—Main lever (15) |
| 31140 | Lever—Pickup lift cable and spring (16) |
| 36522 | Lever—Record discriminating lever |
| 36476 | Lever—Record separator elevating lever with adjustment screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 36530 | Lever—Trip lever less cam and link |
| 36525 | Link—Roller index link |
| 31133 | Pawl—Trip pawl (22) |
| 31535 | Pin—Drive pin for turntable spindle shaft |
| 36268 | Pin—Pin to fasten gear to separator shaft (23) |
| 36267 | Rack—Long arm and gear (41) |
| 32880 | Rack—Short arm and gear (40) |
| 33983 | Screw—Elevating lever pivot screw |
| 36519 | Screw—No. 6-32 ball point screw for elevating lever |
| 36477 | Screw—No. 6-32 ball point screw for record separator elevating lever |
| 36526 | Screw—No. 10-32x5/16 cup point set screw for record separator |
| 32869 | Screw—No. 10-32x5 16 screw for record separator |
| 31118 | Screw—No. 10-32x5 16 set screw for trip lever cam |

# Replacement Parts RP-152 R and RP-152 S

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** Magnetic Type (RP-152-R) |
| 38420 | Arm—Pickup arm shell only—less mechanism support arm, pins, and shielded cable |
| 38194 | Arm—Pickup support arm complete—less bushings and drive pins |
| 14291 | Armature—Pickup armature assembly |
| 34550 | Bushing—Rubber bushing for support arm |
| 32635 | Cable—Pickup lift cable |
| 38215 | Cable—Shielded pickup cable |
| 38216 | Catch—Pickup head catch |
| 14672 | Coil—Pickup coil |
| 38197 | Cover—Insulating cover |
| 38421 | Head—Pickup head shell only |
| 37291 | Mechanism—Pickup mechanism complete |
| 38198 | Pin—Pin to attach head to arm (1/8 in. dia.)—Pkg. 2 |
| 38199 | Pin—Pin to attach support arm to shell (3/32 in. dia.) |
| 38196 | Screw—Needle screw |
| 38217 | Screw—Pickup mechanism support screw—Pkg. 2 |
| 38213 | Spring—Needle point weight adjustment spring |
| 38214 | Stud—Shoulder stud to hold tension spring and head catch |
| | **PICKUP AND ARM ASSEMBLIES** Crystal Type (RP-152-S) |
| 39470 | Arm—Pickup arm—less crystal, cable and pivot arm |
| 36320 | Arm—Pickup pivot arm and shaft—less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pivot arm |
| 32635 | Cable—Pickup arm lift cable |
| 35175 | Crystal—Pickup crystal cartridge |
| 33976 | Pin—Pivot pin to fasten pickup arm to pivot arm |
| | **MOTOR ASSEMBLIES** (25 Cycle) (Motor No. 91655-8) |
| 36952 | Cap—Bakelite cap for motor |
| 36951 | Capacitor—1.25 mfd. for motors (2 required for 25 cycles) |
| 36726 | Motor—105-125 volts, 25 cycle, complete with capacitor |
| 36954 | Rotor—Rotor and shaft for 25 cycle motor |
| | **MOTOR ASSEMBLIES** (50-60 Cycle) (Motor No. 91706-1) |
| 37108 | Bearing—Bottom bearing and bracket |
| 37107 | Bearing—Top bearing and bracket |
| 37109 | Bracket—Motor mounting bracket |
| 37111 | Coil—Motor field coil assembly |
| 38612 | Motor—105-125 volts, 60 cycle (91706-1) |
| 37106 | Pad—Rotor thrust pad |
| 37110 | Rotor—Motor rotor complete with fan |
| 38847 | Sleeve—Motor spindle sleeve for 50 cycle conversion |
| | **MOTORBOARD ASSEMBLIES** |
| 38422 | Base—Pickup arm mounting base |
| 38304 | Bearing—Turntable spindle bearing and washer |
| 39469 | Board—Motorboard with all riveted and welded studs, posts, and bearings—less mechanism (for crystal type only) |
| 38428 | Board—Motorboard complete with bearings and posts—less operating parts (for magnetic type only) |
| 36518 | Box—Used needle box (for crystal type only) |
| 14630 | Cable—Shielded pickup cable and plug, connects to shorting switch (for magnetic type only) |
| 4288 | Connector—Male connector—less bushing and ferrule, for pickup cable (for crystal type only) |
| 36258 | Escutcheon—Index escutcheon (for crystal type only) |
| 38425 | Escutcheon—Index escutcheon (for magnetic type only) |
| 4286 | Ferrule—Bushing and ferrule for pickup cable connector (for crystal type only) |
| 36260 | Gauge—Needle gauge (for crystal type only) |
| 34368 | Grommet—Rubber grommet for motor mounting |
| 36263 | Plate—Turntable shaft support and spring plate |
| 30870 | Plug—2-contact male for motor leads |
| 38430 | Rest—Pickup arm rest post (2 required) |
| 36261 | Rest—Tone arm rest (for crystal type only) |
| 36798 | Spring—Index lever spring (riveted to motorboard) |
| 38322 | Stud—Cam and gear replacement stud |
| 38351 | Stud—Main lever bumper mounting stud |
| 38321 | Stud—Main lever replacement stud |
| 38323 | Stud—Trip pawl replacement stud |

| STOCK No. | DESCRIPTION |
|---|---|
| | **OPERATING MECHANISMS** |
| 36275 | Arm—Motor idler wheel arm and studs—less wheel |
| 10129 | Ball—Steel ball for spindle shaft |
| 33984 | Bracket—Bracket and pin for locating post and lever (3) |
| 36277 | Bumper—Main lever rubber bumper |
| 33987 | Cam—Cam and drive gear complete |
| 36531 | Cam—Trip lever cam and link (for magnetic type only) |
| 36266 | Clutch—Trip lever clutch—less adjusting stud |
| 37875 | Disc—Turntable drive disc and spindle shaft (for crystal type only) |
| 38426 | Disc—Turntable drive disc and spindle shaft assembled—less turntable finished plate and rubber tire (for magnetic type only) |
| 36265 | Finger—Trip lever friction finger |
| 31121 | Gear—Record separator shaft gear |
| 36280 | Gear—Turntable shaft drive gear |
| 33982 | Guide—Main lever spring guide |
| 31151 | Guide—Pickup left cable guide (spring) |
| 38423 | Lever—Index lever |
| 37974 | Lever—Locating lever and pawl |
| 33985 | Lever—Main lever |
| 31140 | Lever—Pickup lift cable lever and spring |
| 38424 | Lever—Pickup discriminating lever and pawl |
| 36476 | Lever—Record separator elevating lever with adjustment screws |
| 31132 | Lever—Trip detaining lever |
| 36530 | Lever—Trip lever—less cam and link (for magnetic type only) |
| 36284 | Lever—Trip lever—less friction finger and clutch (for crystal type only) |
| 36525 | Link—Index link assembly (for magnetic type only) |
| 31133 | Pawl—Trip pawl |
| 36268 | Pin—Pin to fasten gear to separator shaft |
| 36267 | Rack—Long arm and gear |
| 32880 | Rack—Short arm and gear |
| 36281 | Ring—Retaining ring for set screw in turntable drive gear |
| 36477 | Screw—No. 6-32 ball point screw for record separator elevating lever |
| 36276 | Screw—No. 6-32 x 1/4 cup point set screw for turntable drive gear |
| 31118 | Screw—No. 10-32 x 5/16 cone pointed set screw for record separator shelf ("H") |
| 32869 | Screw—No. 10-32 x 5/16 machine screw for record separator shelf |
| 4563 | Screw—Pickup lift cable adjusting screw |
| 33983 | Screw—Record separator elevating lever pivot screw |
| 33990 | Separator—Record separator knife |
| 33988 | Shaft—Record separator shaft (for crystal type only) |
| 37657 | Shaft—Record separator shaft (for magnetic type only) |
| 33989 | Shelf—Record separator rotating shelf—less set screws |
| 33994 | Spring—Flat spring for record discriminator lever |
| 32882 | Spring—Main lever spring |
| 36278 | Spring—Pickup arm feed spring |
| 3666 | Spring—Pickup lift cable spring |
| 14190 | Spring—Record discriminating lever pawl spring |
| 3676 | Spring—Tension spring for cam pawl |
| 30585 | Spring—Tension spring for idler assembly |
| 32436 | Spring—Tension spring for locating lever and pawl |
| 31136 | Spring—Tension spring for roller index link (for magnetic type only) |
| 36921 | Spring—Tension spring for trip detaining pawl |
| 36279 | Spring—Tension spring for trip pawl |
| 36271 | Stud—No. 4-40 hex. stud for trip lever clutch adjustment (for magnetic type only) |
| 38995 | Switch—Automatic switch—less cam, base, and shaft (for magnetic type only) |
| 34875 | Switch—Pickup shorting switch |
| 37873 | Tire—Rubber tire for drive disc |
| 38427 | Turntable—Finished top plate only |
| 31608 | Washer—"C" washer for roller index link |
| 33726 | Washer—"C" washer for motor idler |
| 8078 | Washer—Spring washer for mounting record discriminating lever |
| 2917 | Washer—Spring washer for mounting levers |
| 36274 | Wheel—Motor idler wheel and bearing—less arm |

# Replacement Parts

## RP-155 Recorder and Automatic Record-Changer Phonograph Mechanism

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **PICKUP AND ARM ASSEMBLIES** |
| 36322 | Arm—Pickup arm only—less crystal, cable and pivot arm and shaft |
| 36320 | Arm—Pickup pivot arm and shaft—less lift cable and rubber bushings |
| 34550 | Bushing—Rubber bushing for pickup pivot arm |
| 32635 | Cable—Pickup lift cable |
| 35694 | Cable—Pickup shielded cable (8) |
| 37158 | Crystal—Pickup crystal cartridge and needle screw |
| 33529 | Screw—Pickup needle screw |
| 36278 | Spring—Pickup arm starting spring |
| | **MOTOR ASSEMBLIES** |
| 37039 | Bearing—Bottom bearing and bracket assembled |
| 37038 | Field—Motor field complete |
| 36820 | Motor—105-120 volts, 60 cycle |
| 37037 | Pulley—Motor shaft pulley |
| 37040 | Ring—Motor pulley support ring |
| 37036 | Rotor—Motor armature complete |
| | **MOTORBOARD ASSEMBLIES** |
| 36824 | Base—Pickup arm mounting base |
| 36821 | Board—Motorboard with riveted and welded bearings and studs less operating mechanism. |
| 36822 | Brace—Motorboard brace |
| 32556 | Cable—Shielded pickup cable and plug |
| 36262 | Cup—Used needle cup—insert only for pickup arm rest |
| 36258 | Escutcheon—Index escutcheon |
| 36260 | Gauge—Pickup needle gauge |
| 36823 | Mounting—Motor mounting screw, spacer, rubber cushion and washer (3 required) |
| 30870 | Plug—2-contact male plug for motor leads |
| 36379 | Rest—Pickup arm rest—less needle cup |
| 36798 | Spring—Index lever spring (riveted to motorboard) |
| 37348 | Weight—Lead weight for motor |
| 37878 | Spring—Motorboard mounting |
| | **HOME RECORDING ASSEMBLIES** |
| 36829 | Arm—Follower arm and post assembly |
| 37041 | Arm—Recorder arm less Recorder head |
| 36827 | Bushing—Recorder arm pivot post bushing |
| 37044 | Nut—Special hex nut for recorder arm pivot bushing |
| 36826 | Plate—Straddle plate for recorder arm pivot post |
| 33166 | Plug—2-contact male for recorder head leads |
| 37042 | Recorder—Recorder head only—less arm |
| 36825 | Rest—Recorder arm rest |
| 37045 | Screw—Recorder head needle screw |
| 36828 | Spring—Recorder arm pivot post compressing spring (spiral) |
| 37043 | Spring—Recorder head tension spring |
| 37349 | Weight—Lead weight for recorder head |
| 37969 | Spring—"U" shaped spring for recorder-arm fulcrum |
| 37970 | Screw—Slotted, hex-head, cup-point, set screw to fasten recorder arm to pivot shaft |
| | **OPERATING MECHANISM** |
| 36832 | Arm—Motor drive disc arm (53) |
| 36277 | Bumper—Rubber bumper "A" |
| 33987 | Cam—Cam and drive gear assembly (42) |

| STOCK No. | DESCRIPTION |
|---|---|
| 36838 | Casting—Casting and bearing for turntable spindle and lead screw (50) |
| 30340 | Clip—Motor drive disc retaining clip |
| 36266 | Clutch—Trip lever clutch (5) |
| 36831 | Disc—Motor drive disc and rubber tire |
| 36265 | Finger—Trip lever friction finger (7) |
| 36267 | Gear—Long arm and rack gear (41) |
| 36839 | Gear—Pinion gear for turntable spindle |
| 31121 | Gear—Record separator shaft gear (10) |
| 32880 | Gear—Short arm and rack gear (40) |
| 33982 | Guide—Main lever spring guide (11) |
| 36830 | Guide—Pickup lift cable guide (2) |
| 36380 | Lever—Index lever (12) |
| 36273 | Lever—Locating lever and pawl (14) |
| 33985 | Lever—Main lever (15) |
| 31140 | Lever—Pickup lift cable lever (16) |
| 36381 | Lever—Record discriminating lever (17) |
| 36476 | Lever—Record elevating lever and screws (18) |
| 31132 | Lever—Trip detaining lever (19) |
| 36284 | Lever—Trip lever less friction finger and clutch (20) |
| 31133 | Pawl—Trip pawl assembly (22) |
| 36268 | Pin—Drive pin to engage gear to record separator shaft (23) |
| 36834 | Pin—Pin for turntable to hold disc while recording |
| 36477 | Screw—Ball point screw for record elevating lever "G" |
| 31118 | Screw—Cone pointed set screw for record separator shelf "H" |
| 36837 | Screw—Lead screw and pinion gear for recorder drive (51) |
| 33983 | Screw—Record elevating lever pivot screw |
| 33990 | Separator—Record separator knife (25) |
| 33988 | Shaft—Record separator rotating shaft (34) |
| 33989 | Shelf—Record separator shelf (27) |
| 36836 | Spindle—Turntable spindle |
| 3676 | Spring—Cam pawl spring |
| 14190 | Spring—Discriminating lever pawl spring (28) |
| 37347 | Spring—Tension spring for motor idler pulley arm (52) |
| 36835 | Spring—Flat spring for turntable recording disc pin |
| 32436 | Spring—Locating lever spring (35) |
| 32882 | Spring—Main lever spring (43) |
| 3666 | Spring—Pickup lift cable spring (31) |
| 33994 | Spring—Record discriminating lever spring (flat) (9) |
| 36921 | Spring—Trip detaining lever spring (33) |
| 36279 | Spring—Trip pawl spring |
| 36271 | Stud—Trip lever clutch adjustment stud "E" |
| 32875 | Switch—Motor switch (4) |
| 34875 | Switch—Pickup shorting switch |
| 36833 | Turntable—Turntable assembly complete |
| 2917 | Washer—"C" washer used to mount all levers except trip detaining lever |
| 8078 | Washer—"C" washer for mounting record discriminating lever |
| 37046 | Washer—Rubber washer for turntable drive wheel arm |
| 20165 | Washer—Spring washer to mount rack gears and trip detaining lever |
| | **50-CYCLE MOTOR** |
| 37943 | Bearing—Bottom bearing and bracket (50 cycle) |
| 37945 | Field—Motor field—110 volts, 50 cycles |
| 37941 | Motor—105-120 volts, 50 cycles |
| 37944 | Pulley—Motor shaft pulley (50 cycle) |
| 37942 | Rotor—Motor armature (50 cycle) |
| | Parts originally listed above are applicable to 110 volts, 60 cycle motor only, except Stock No. 37040 Ring, which is used on both 60 and 50 cycle motors. |

REPLACEMENT PARTS RP-157
LISTED WITH MODEL QU-7

# RP-158 RP-160, RP-161 and RP-162

## Automatic Record Changers

### IDENTIFICATION

RP-158 - Tone arm lands on rest after playing last record but motor does not shut off. Uses Stock No. 38610 crystal pickup. Button type reject.

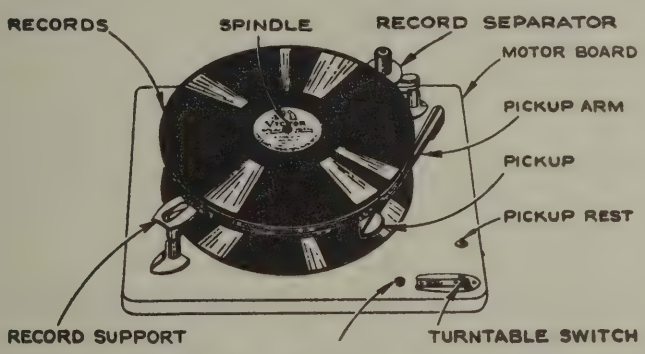
RP-160 - Tone arm lands on rest after playing last record. Automatic switch shuts off motor. Uses low-noise crystal pickup Stock No. 38453 or 39950. Lever type reject.

RP-161 - Adapted to home recording. Uses Stock No. 38610 crystal pickup. Tone arm lands on rest after playing last record but motor does not shut off. Lever type reject.

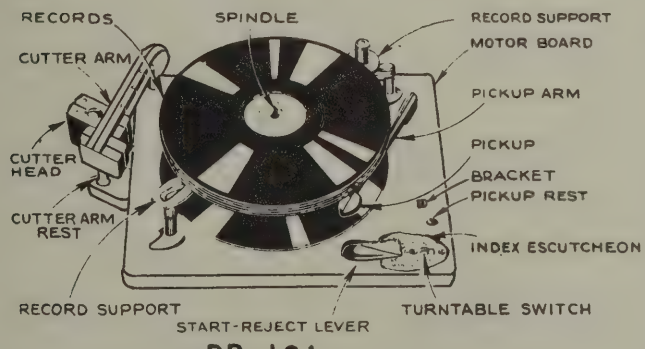
RP-162 - Repeats playing of last record. Uses Stock No. 38610 crystal pickup. Button type reject.

### MODEL vs "RP" NUMBERS

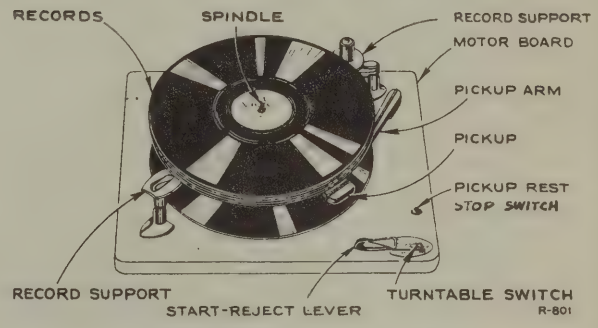
| RP-158 | RP-160 | RP-161 | RP-162 |
|---|---|---|---|
| V-175 | V-215 | VHR-212 | V-135 |
| V-209 | V-219 | | V-140 |
| V-210 | V-221 | | R-566P |




RP-158, RP-162




RP-161




RP-160

This mechanism is designed to play a series up to twelve 10-inch, or ten 12-inch records of the 78 r.p.m. type. It will also play single records of any diameter up to 12 inches.

### Lubrication

The drive motor bearing is lubricated from felt washers at the bottom and top. A light machine oil should be used at these points.

On all bearing surfaces except the motor bearings Houghton Stayput No. 320 should be used. On all other surfaces Lubriplate No. 110 is recommended.

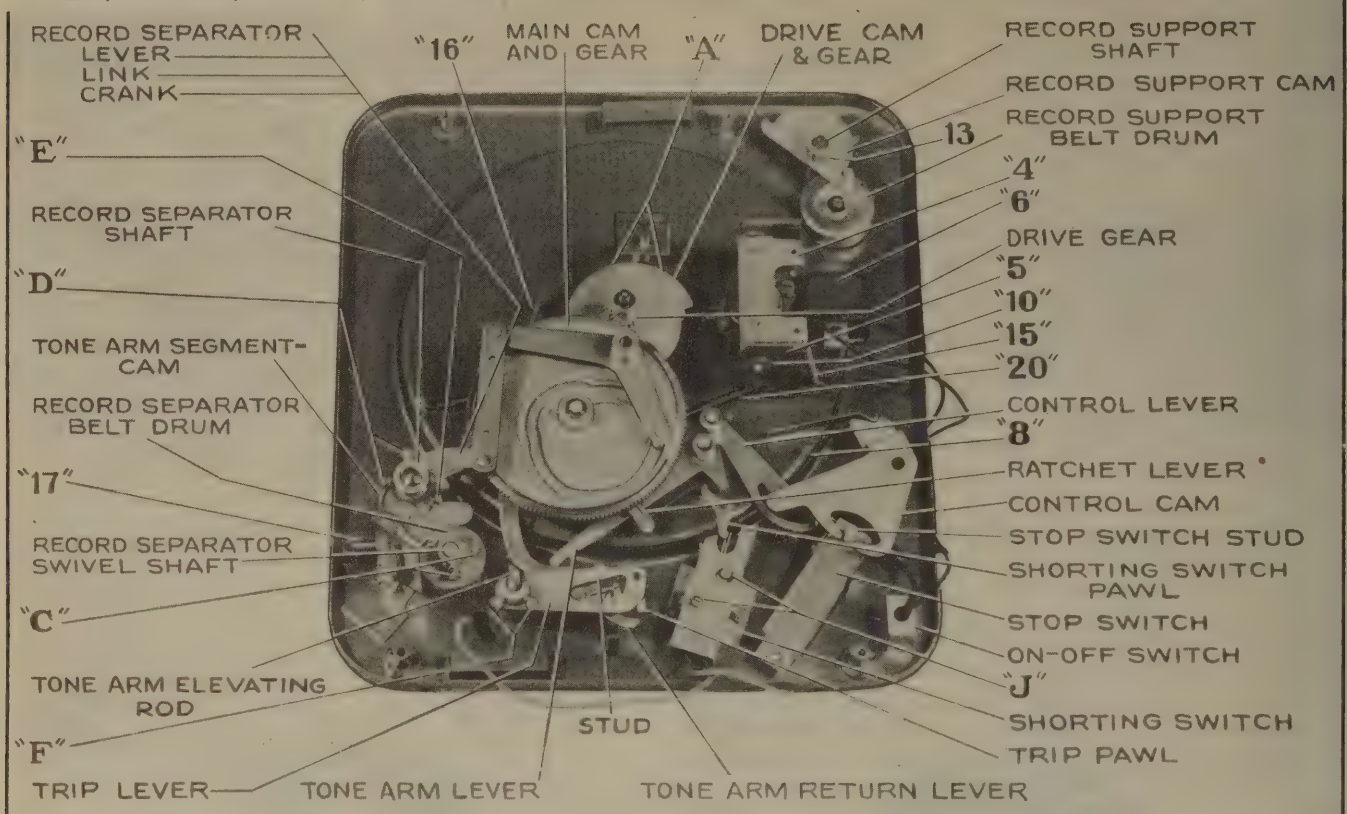
It is important that the drive motor spindle and the rubber tire on the idler wheel be kept clean and free from oil, grease, dirt, or any foreign material at all times. Any quick drying naphtha is satisfactory for cleaning these parts.

### Cautions

Before servicing the automatic changer, inspect the assembly to see that all gears, cams, springs, levers, etc., are correctly assembled and in good working order.

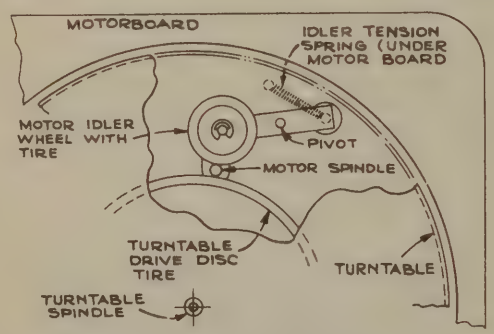
1. Never use force to start or stop the motor or any part of the record changing mechanism.
2. Warped or damaged records may cause the mechanism to jam. **When jamming occurs, the safety clutch slips, causing a clicking sound.**
3. A cracked or chipped record may damage the sapphire.
4. Warped records may slide on one another while playing and result in unsatisfactory reproduction.
5. Do not leave the records on the record posts or on the turntable as they may warp, particularly in warm climates. Warped records may be flattened by placing them on a flat surface with a heavy flat article placed on top of them for a few days.
6. If, for any reason, the mechanism stalls, turn off the turntable switch and remove the records from the posts. Start the turntable by turning the switch on and allow the pickup arm to complete its cycle.
7. Do not tighten copper-plated, cone-pointed screws until final adjustment has been made.

## RP-158, RP-160, RP-161, RP-162

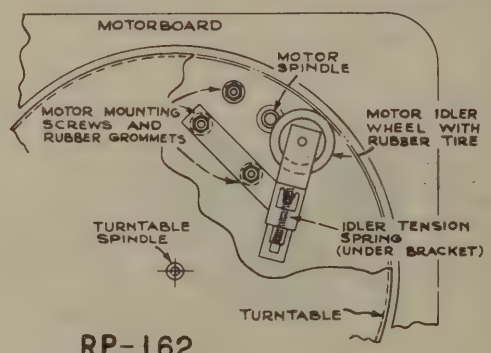



BOTTOM VIEW RP-160

Automatic stop switch and pickup shorting switch used only with RP-160. Record separator and record support belt drums not used with RP-162.




RP-158, RP-160




RP-162

Turntable drive of RP-161 is similar to RP-162

**Tone Arm Feed-in Spring.—**

When the sapphire comes down on the record, the feed-in spring (shown in adjustment sketch "E," acts to push the tone arm toward the music grooves. The spring should be adjusted to do this without causing the sapphire to skip grooves. This action is also related to—

**Cabinet Leveling.—**

If the sapphire fails to enter the starting groove, raise the right-hand side of the cabinet by inserting thin spacers under the legs. If the pickup slides over a few grooves, raise the left-hand side of the cabinet.

This changer is designed to operate **when the changer and cabinet are level.** Always make landing adjustments under these conditions.

**To Repeat One Record.—**

When checking for landing and tripping action, it is possible to play one record repeatedly by simply placing a weight on the rear record post. A small pipe nipple that fits over the top of the post is satisfactory.

**Sapphire Pressure.—** RP-158, -161, -162

In these mechanisms, the correct pressure is approximately 2 ounces, measured at the sapphire. Adjust the spring (3) in the tone-arm base if necessary (see sketch "G").

**Sapphire Pressure.—** RP-160

In these mechanisms, the correct pressure is from 1 to 1¼ ounces, measured at the sapphire. Adjust the spring (3) in the tone-arm base if necessary.

## Cycle of Operation

The changer can be conveniently rotated through the change cycle by pushing the reject button and revolving the turntable by hand. Eight turntable revolutions are required for one change cycle. Hold idler arm back so idler wheel is away from turntable to permit easier manual rotation of the turntable.

| Function | Explanation |
|---|---|
| **Press "Start-Reject Button"** | 1. Reject lever moves in and pushes rachet lever, thus releasing drive cam pawl.<br>2. Drive cam pawl engages cam sprocket and it revolves carrying drive gear with it. |
| **Tone Arm Rises** | 1. Main cam and gear revolves with drive gear.<br>2. Stud on tone arm lever rides in top track on main cam and directs movement of the lever.<br>3. Tone arm elevating lift rides up on ridge on main cam and pushes tone arm up by means of lift rod. |
| **Tone Arm Moves Out** | 1. Tone arm lever pushes on trip lever stud.<br>2. Trip lever moves out, carrying the tone arm out.<br>3. Tone arm return lever is carried along by trip lever stud, and by stud on main cam top track. |
| **Record Knife Separates Bottom Record from Stack after Gauging Thickness of Record** | 1. Stud on separator lever follows main cam bottom track and directs the motion of the lever.<br>2. Through the separator link and crank, the separator lever turns the separator shaft.<br>3. Knife turns with shaft and strikes edge of bottom record.<br>4. Separator shaft continues to revolve and teeth on inner circumference of knife ride up on shelf teeth until knife is carried high enough against the action of spring 19 to move in over top of bottom record. |
| **Record Drops to Turntable** | 1. Separator shaft continues to turn until knife supports stack of records and shelf moves out from under bottom record, which drops to turntable. |
| **Tone Arm Moves In** | 1. Separator shaft reverses rotation.<br>2. Tone arm return lever pushes on trip lever stud.<br>3. Trip lever moves in, carrying the tone arm in. |
| **Tone Arm Lowers Sapphire on to Record** | 1. Index finger on tone arm return lever moves against separator shaft to insure proper landing position.<br>2. Tone arm elevating lever rides down on main cam ridge thus lowering the elevating rod and the tone arm.<br>3. Separator shaft returns knife to original position and allows stack of records to rest on shelf. |
| **Sapphire Moves In to Record Groove**<br>**Record Begins to Play** | 1. Ratchet lever rides down into eccentric step on main gear shaft and blocks drive cam pawl, disengaging the pawl from drive cam socket.<br>2. Drive gear and main gear stop.<br>3. Tone arm lever moves into cam to maintain disengagement. |

## Miscellaneous Service Hints

*Mechanism trips continuously.*

Check to see that the ratchet lever engages drive cam pawl at end of change cycle. Bend lever if necessary. Check adjustment "H." Bend the control cam flat spring for greater pressure.

*Turntable does not stop automatically.*

RP-160

Check for bind in stop button bushing. Bend the flat bracket that limits outward movement of the trip lever, so that pickup lands on the stop button.

*Turntable fails to start.*

RP-180

Check spacing of stop switch contacts to be certain that weight of stop button does not open them.

*Loud clicking noise resulting from drive cam pawl slipping out of teeth in cam sprocket.*

*Mechanism jams.*

Check mechanism timing adjustment. Make certain that pickup arm lever is not binding on its stud. Any jam will cause the clutch to slip and produce clicking sound.

*Irregular landing on 10 and 12 inch records.*

Check adjustment "C." Insufficient tension on belt.

*Tone arm continues to repeat playing top record of the stack.*

Check adjustment "E." Record separator shaft, or the spring on which it rests, is binding on the shaft bushing. Pin on record separator shaft is binding in its slot. Shaft spring is too weak. Do not tighten set screws "D" enough to distort the housing of the separator shaft spring. Do not oil the record separator shaft.

*Tone arm continues to come down in rest position.*

Check adjustment "E." Record separator shaft or the spring on which it rests is binding on the shaft bushing. Pin on record separator shaft is binding in its slot. Shaft spring is too strong.

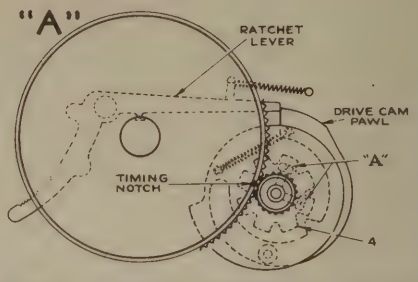
# Automatic Record Changer Adjustments

*Mechanism jams. General irregularity of operation.*

*(Mechanism Timing)*

**"A"**

With the ratchet lever and the pawl on the drive shaft cam in playing position as shown, remove the bottom support bracket. Remove the "C" washer on the main cam shaft and slip the cam down far enough that it can be rotated with respect to the drive gear. Then rotate it until the timing notch is positioned as shown. Put the main gear back in mesh with the drive gear, replace the "C" washer, place the elevating lever on the cam ridge. Make certain the separator lever train is in its correct position and replace the bottom support bracket.




*Turntable does not turn freely.* **"B"**

*(Turntable Bottom Bearing Position)*

Loosen the bottom bearing screws "B" and position the bottom bearing plate until the turntable revolves freely. Tighten the screws and check by applying a.c. to the turntable motor then shutting it off and noting that the turntable continues to make at least twelve revolutions.

*Records strike separator post or fail to stay on record shelf.*

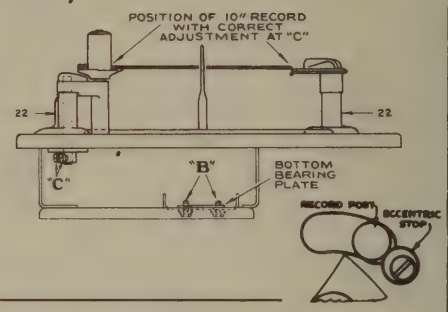
*(Spacing Between Record Posts)*

**"C"**

Turn the record support post to the ten-inch position. Loosen set screws "C," hold the separator post against the end of its slot in the motorboard and turn the belt drum to take up any slack in the belt. Tighten the zinc-plated, blunt-nosed screw and check to see that a ten-inch record fits the posts as shown. Then tighten the copper-plated, cone-pointed screw.

The twelve-inch position is adjusted after that of the ten-inch, by changing the support post to take the twelve-inch record, and turning the eccentric stop until the edge of the record is halfway up on the record support bevel while the other edge is against the record separator post.

**"B", "C"**



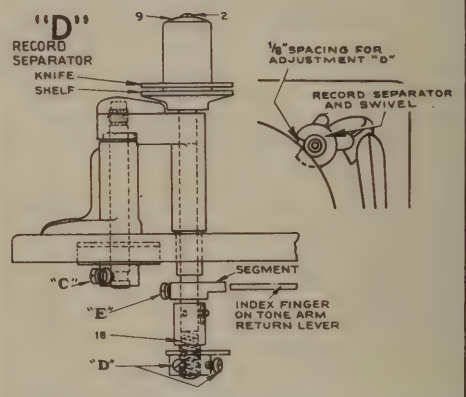

*Records do not drop at proper time.*

*(Record Shelf Timing)*

**"D"**

Place a ten-inch record on the posts. Loosen the set screws "D" and turn the record separator shaft until the edge of the record-separating knife is one-sixteenth inch away from the edge of the record. The teeth on the inner circumference of the knife should be resting in the bottom of their slots at the time the adjustment is made. Tighten the zinc-plated screw first, run through cycle several times as a check, then tighten the copper-plated screw. Do not tighten set screws "D" enough to distort the housing of the separator shaft spring.

**"D"**



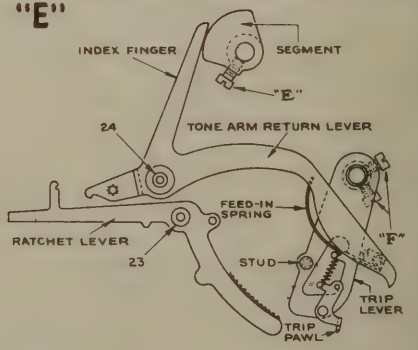

*Tone arm continues to repeat playing of top record or jams when part way in on record.*

*(Segment height or radial position)*

**"E"**

Take all records off the posts. Loosen the set screw "E." Set the record separator segment so that the index finger of the pickup arm return lever rides on the middle of the segment, as shown. Rotate the cam until it is in such a position that the index finger will never ride off either end. Check to see that the index finger rides in over top of the cam when the record shelf is depressed by the weight of one record. Tighten the set screw.

**"E"**




*Sapphire does not land at correct point on 10-inch record.* **"F"**

*(Tone Arm Position With Respect To Trip Lever)*

*Correct dimension from outside edge of spindle to sapphire* $4\ 11/16$ *inches.*

Place a ten-inch record on the turntable and rotate the changer through cycle until the sapphire is just ready to land. Make sure that the index finger of the pickup arm return lever is against the record separator shaft and that the tone arm trip lever stud is held firmly against the return lever. Loosen the set screws "F" and move the pickup arm to the correct landing position. See that there is a 1/32 inch clearance between the pickup arm bearing and the set screw collar. Tighten the zinc-plated screw, run the changer through cycle several times as a check, then tighten the copper-plated screw.

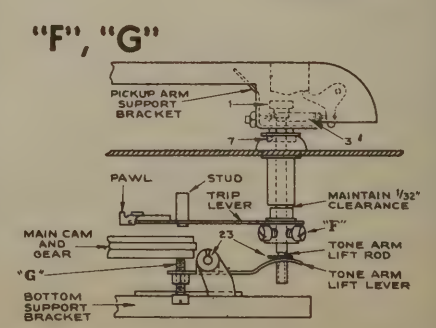
The twelve-inch landing position is automatically maintained.

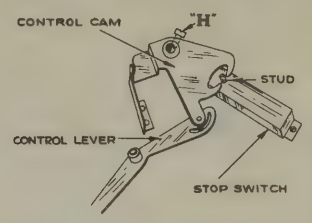
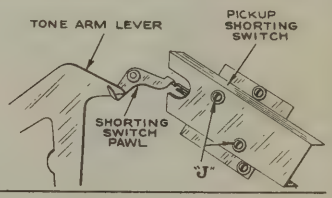
*Top of pickup arm strikes stack of records or sapphire fails to clear the records on the turntable.* **"G"**

*(Pickup Arm Height While In Cycle)*

Rotate the changer through cycle until the pickup arm has risen to its maximum height above the turntable but has not begun to move out. At this point adjust the screw "G" until the distance between the turntable and the sapphire is one and three-sixteenths inch. Tighten the locknut.

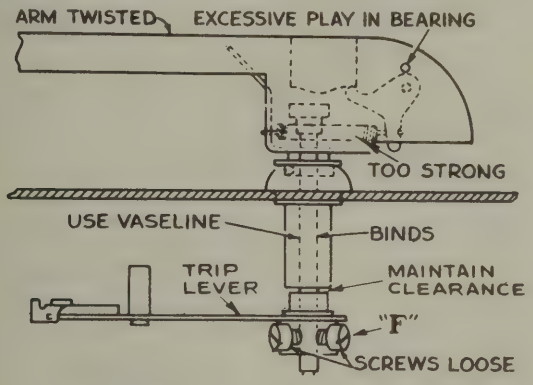
**"F", "G"**

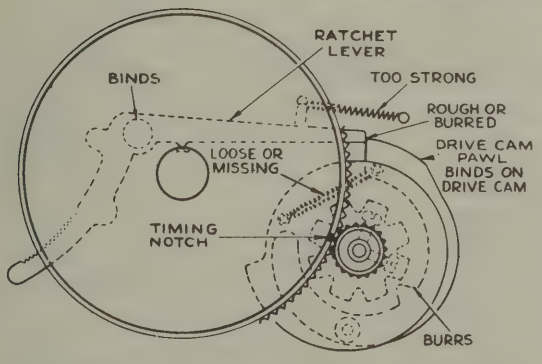


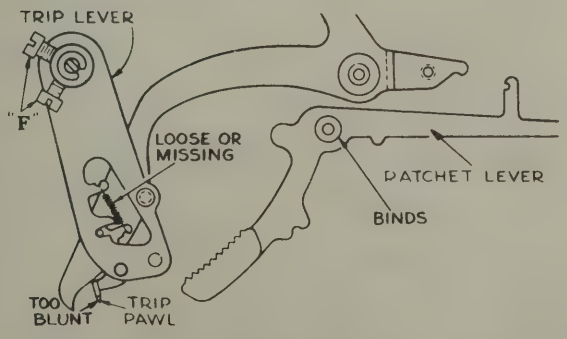
| | | |
|---|---|---|
| *Mechanism fails to start, or automatic stop switch is inoperative in "automatic" position.* **"H"** *(Control Cam Position)* RP-160 | Set the control lever to "automatic." Loosen set screw "H" and move the control cam until the stud on stop switch is centrally located as shown. Tighten set screw "H." |   |
| *No output, or noise during cycle.* **"J"** *(Position of Pickup Shorting Switch)* RP-160 | Loosen screws "J." Position the switch to obtain 1/32-inch clearance between the switch blades when the tone arm is in playing position. Tighten screws "J." **Make certain that the pawl is on the correct side of the long leaf spring in the shorting switch.** |   |

## Fails to Trip:

First check adjustment "F". Do not tighten screws "F" too tightly or the hollow pivot shaft will be distorted.

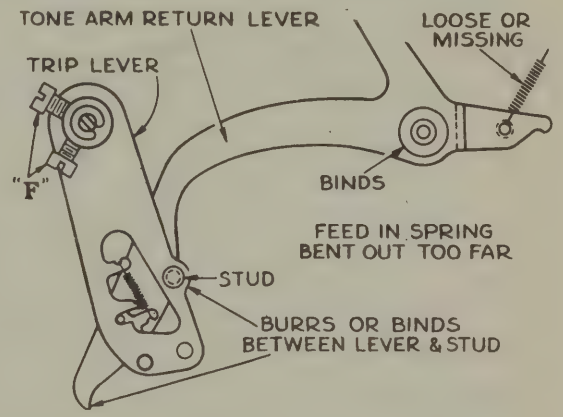


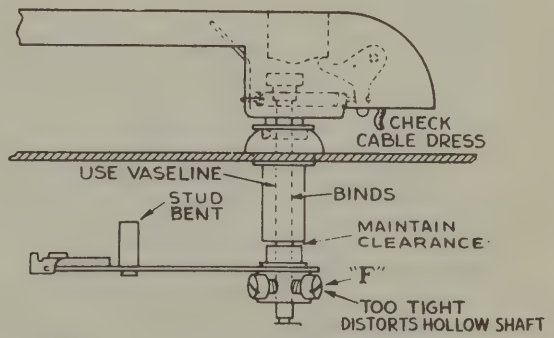



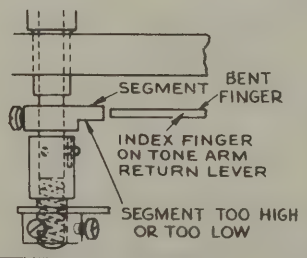




## Lands Incorrectly:

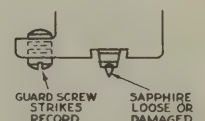
First check adjustments "F", "C", "M", "E".




## Fails to Track or Distorts:




**To Remove Pickup Arm.—**

One of the tone arm bearings has a slotted head and can be turned out to facilitate removal of the tone arm. Raise the tone arm and loosen the bearing set screw. Turn the bearing partly out through the hole in the side of the tone arm and lift the arm off.

**To Remove the Turntable.—** RP-158, -160, -162

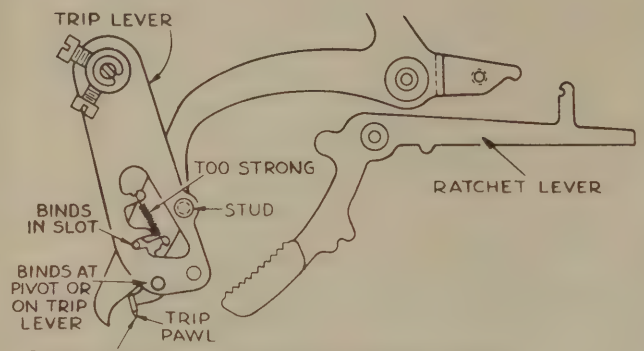
To remove the turntable, loosen set screws "A" and lift the turntable up.

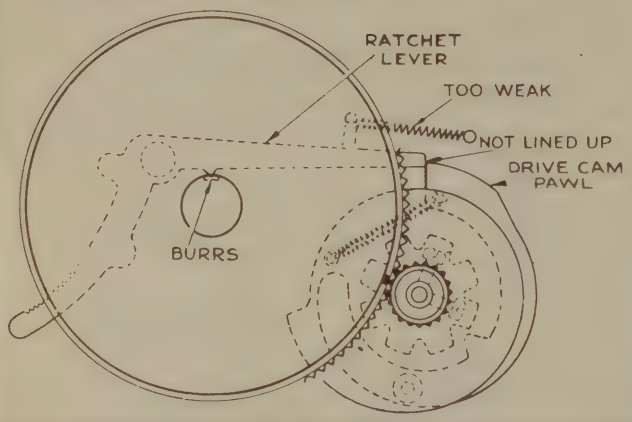
**To Remove the Turntable.—** RP-161

Insert 10-32 screws in the holes on either side of the spindle. Tap lightly on top of the spindle while pulling upward on the screws and turntable.

# RP-158, RP-160, RP-161, RP-162

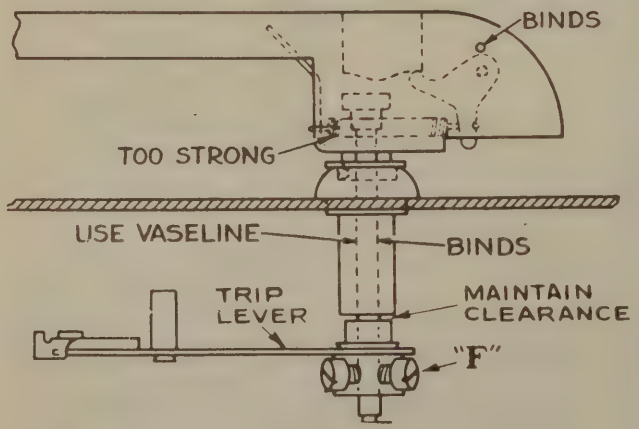
## Trips Early:

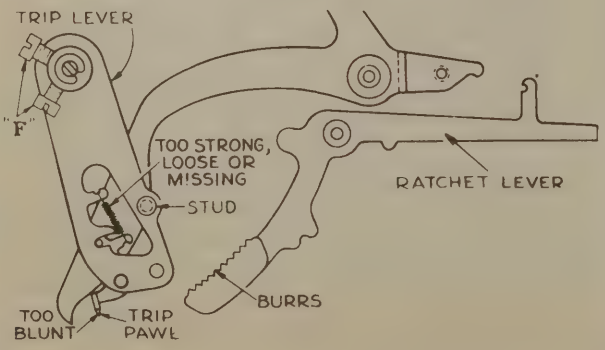


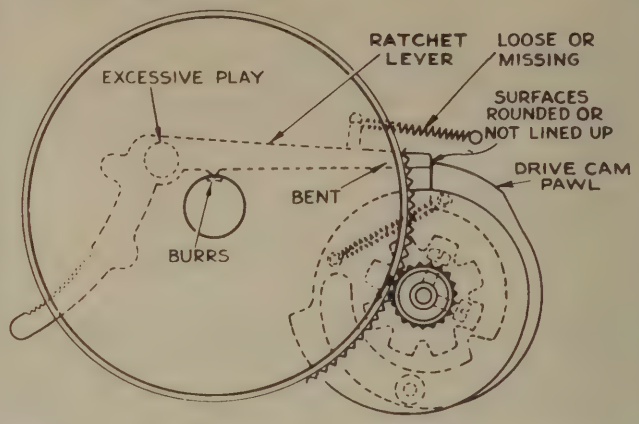

## Repeats Grooves:

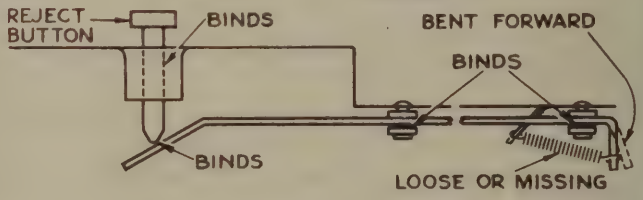
First check adjustment "G".

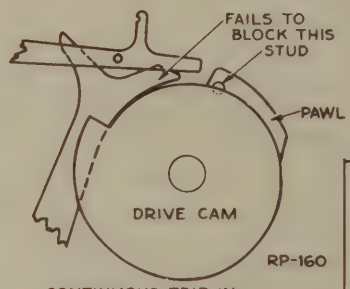



## Trips Continuously:

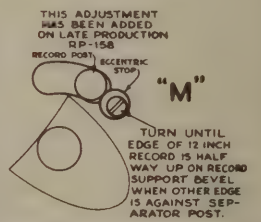


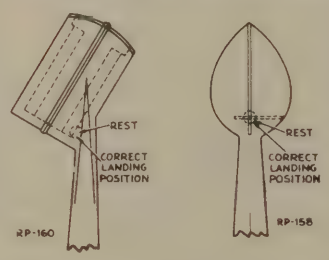



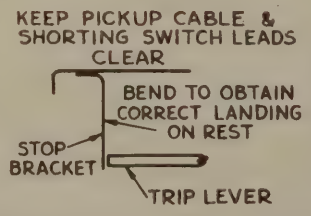

CONTINUOUS TRIP IN MANUAL POSITION

## 12-Inch Record Post Spacing:

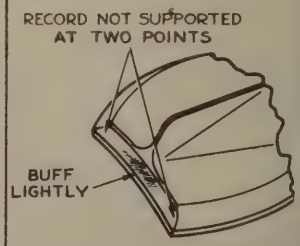

THIS ADJUSTMENT HAS BEEN ADDED ON LATE PRODUCTION RP-158
RECORD POST
ECCENTRIC STOP
"M"
TURN UNTIL EDGE OF 12 INCH RECORD IS HALF WAY UP ON RECORD SUPPORT BEVEL WHEN OTHER EDGE IS AGAINST SEPARATOR POST.

## Incorrect Landing on Rest:

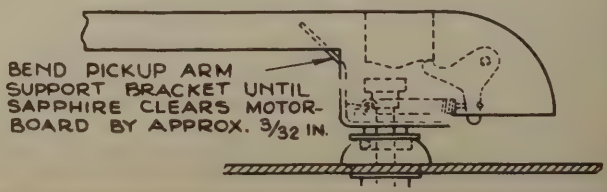



## Record Stack Unsteady:

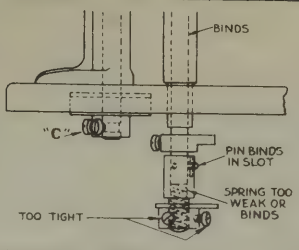



## Sapphire Strikes Motorboard



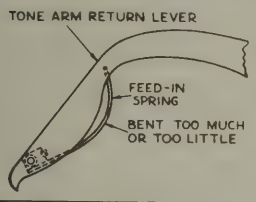
## Repeats Playing of Last Record:

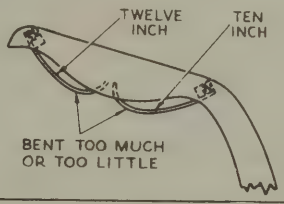
First check adjustment "E"




## Incorrect Feed-in:

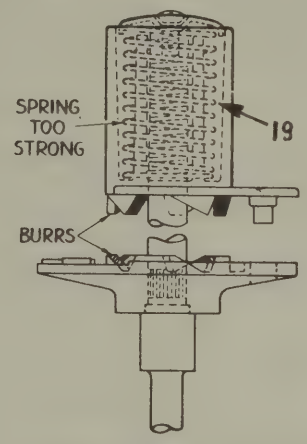
The feed-in spring does not have any effect until just after the pickup has landed on the record. It then springs back to its original shape pushing against the trip lever stud and moving the pickup toward the music grooves.

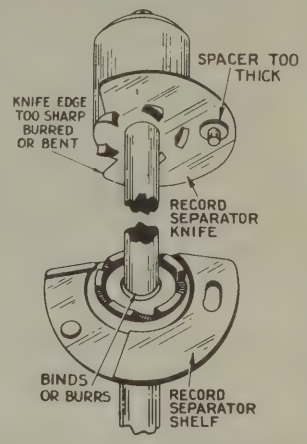


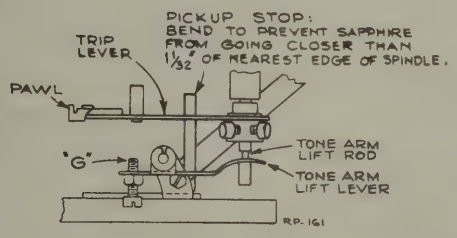

## Jams Records:

Record too thick, too thin, warped, or has rough edge.



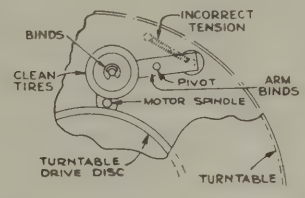



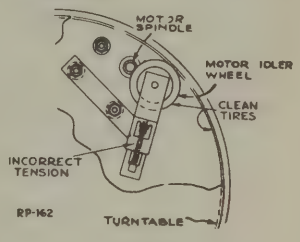

## Sapphire Strikes Spring Stud on Turntable RP-161


PICKUP STOP: BEND TO PREVENT SAPPHIRE FROM GOING CLOSER THAN 1 1/32" OF NEAREST EDGE OF SPINDLE.
TRIP LEVER
PAWL
"G"
TONE ARM LIFT ROD
TONE ARM LIFT LEVER
RP-161

## Slow Speed:

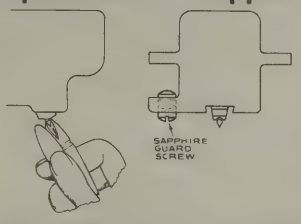
Turntable spindle binds on bottom bearing. Incorrect tension on motor support spring.



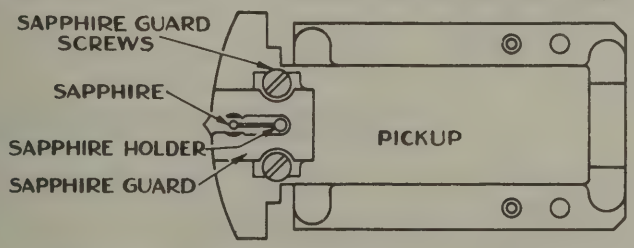



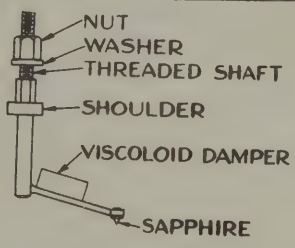

## Replacement of Sapphire

As an additional precaution against rough handling, the top of the sapphire is dipped in a rubber cement (such as Goodrich "Plasticon") before being inserted in the pickup. To remove the sapphire, grasp it firmly with a pair of tweezers, give it a few turns to loosen the cement and then pull it out. Much easier handling of the sapphire will result if the tweezers are notched with a file as shown. Naphtha may be used as a thinner should difficulty with the rubber cement be experienced.




Before inserting the new sapphire it should be dipped in the rubber cement previously thinned with naphtha. After insertion clean the point with naphtha if there is any doubt as to the presence of cement.




**Specifications**....Output at 400 cycles..... 0.50 volts
Impedance at 1,000 cycles... 75,000 ohms

**Replacement of Complete Unit**...Simply slide the unit out of the tone arm and insert a new one.

**Replacement of Sapphire**.....Caution: Never bend the sapphire support wire. Slide the pickup forward out of the arm.

The nut on the sapphire holder assembly is locked by a light cement (such as Glyptal). Extreme care should be used when loosening the nut so that the twisting motion does not break the crystal.

Remove the two screws holding the sapphire guard in place and take the guard off. Remove the small nut and washer on the threaded shaft of the sapphire holder and push the shaft through the hole in the viscoloid until the sapphire holder assembly comes free.

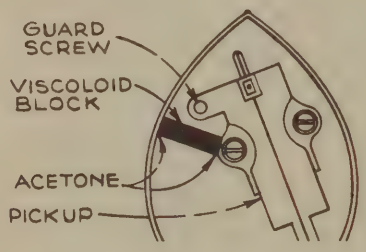
Insert threaded shaft of replacement sapphire holder through viscoloid and replace the washer and nut. Make sure that the flat sides of the shaft are firmly in place in the clamp and then tighten the nut very carefully so as not to strip the threads nor break the crystal. Replace the sapphire guard, positioning it by means of the oversize screw slots. Make certain that the sapphire and its supporting wire are centered in the guard. Tighten the guard screws. Before using, check to see that the sapphire projects far enough beyond the guard so that the guard will not strike the record. If necessary, bend the guard a little. Apply a drop of light cement (such as Glyptal) to the sapphire nut holder.

Bend the spring contacts to make good contact with the slides in the tone arm.

# RP-158, RP-160, RP-161, RP-162

### Tone-Arm Resonance:

Chatter at frequencies near 2,500 cycles on some 1st production RP-158 or RP-162 mechanisms is caused by tone-arm resonance which can be eliminated by inserting a block of viscoloid (½ in. x ½ in. x 3/16 in.) in the arm as shown. The viscoloid block is No. 39949.




*Viscoloid damper (No. 39949) minimizes tone arm resonance in RP-158, -162.*

## IMPROVED TONE ARM RETURN LEVER

### Stock No. 39751

The tone arm return lever in RP-158, -160, -162, has been revised to incorporate two important improvements:

(1) **A cam to adjust landing position on 12-inch records.**

(2) **A positive-acting feed-in lever and spring.** (This pushes the tone arm in toward the music grooves after the sapphire has landed on the record.)

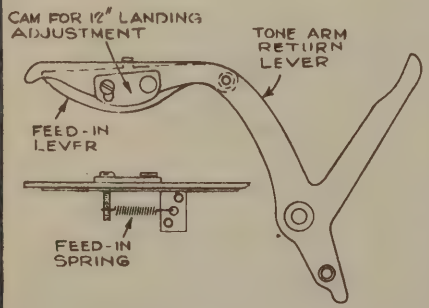
This revised lever, Stock No. 39751, supersedes the original lever, Stock No. 38618.

### 12-inch Landing Adjustment:

When adjusting a mechanism that has this revised lever, make the 10-inch landing adjustment in the usual manner as specified in the service notes. Then check landing on a 12-inch record and adjust the cam if necessary. The correct landing position for 12-inch records is 5⅜ inches from the sapphire to the nearest side of the spindle.

### Feed-in Spring Adjustment:

The feed-in spring (Stock No. 39752) is hooked in one hole on a bracket that has three spaced holes to permit coarse adjustment of feed-in tension. Fine adjustment can be obtained by bending the bracket.




*Stock No. 39751 tone arm return lever has a cam to adjust 12-inch landing position, and a positive acting feed-in mechanism. The feed-in tension can be adjusted by hooking the spring in a different hole on the bracket, and by bending the bracket.*

### Bakelite Alternate Replacement Parts:

The following shows a comparison of replacement part stock numbers for the above record changers when bakelite parts are used as alternates for regular die-castings:

| Description | Stock No. Die-Cast | Stock No. Bakelite |
|---|---|---|
| Record Separator Assembly: | | |
| Separator cap | 38470 | 38470 |
| Separator knife | 38467 | 39768 |
| Separator spring (upper) | 38468 | 39769 |
| Separator spring (bottom) (RP-158, -160, -161) | 38621 | 39968 |
| Separator shelf and shaft (RP-158, -160, -161) | 38652 | 39767 |
| Separator shelf and shaft (RP-162) | 39035 | 39770 |
| Main Cam | 38641 | 39760 |
| Record Support and Shaft (Left hand front post): (RP-158, -160, -161) | 38645 | 39762 |
| Record Support Cam: (RP-158, -160, -161) | 38646* | 39763† |
| Tone Arm Segment Cam: (RP-158, -160, -161) | 38619* | 39764† |

*The die-cast cams 38646 and 38619 require a 10-32 set screw, stock number 32869, to fasten cam to shaft.

†The bakelite cams 39763 and 39764 require a drive pin, stock number 39765, to fasten cam to shaft. (A drive pin is included with 39763 and 39764).

## RP-158, RP-160

### Eccentric Stop, No. 39569:

In Replacement Parts, add Stock No. 39569 eccentric stop for record separator support.

### Slow Speed:

In cases of slow speed, adjust the bottom bearing of turntable spindle to remove binding and to obtain free rotation. Refer to adjustment "B" in Service Data. Check by applying power to the turntable motor, allowing turntable to reach full speed, then pull motor away from turntable drive disc. The turntable should coast for at least twelve revolutions. (In RP-162, disengage motor from turntable by pulling idler away from turntable to observe coast.)

## RP-160

### Spring for use with Zinc Crystal:

On RP-160 with aluminum pickup arm, and aluminum-cased crystal, the spring that governs pickup pressure is No. 30585: with zinc pickup arm and aluminum-cased crystal, the spring is No. 39673. When installing a zinc-cased crystal in a zinc arm, cut 1½ turns off the spring, or install a No. 39754 spring.

## RP-160

### Sapphire Pressure:

The correct sapphire pressure in RP-160 is approximately 1½ ounces. The pressure is governed by a spring inside the end of the pickup arm. Owing to the fact that both aluminum and zinc castings (with difference in weight) have been used for the arm and the crystal, and also that only the zinc crystal (Stock No. 39550) is supplied for replacement, it is necessary to check the sapphire pressure whenever either the crystal or the arm is replaced.

The zinc arm is identified by the letters "ZN" after the drawing number inside the arm.

The zinc crystal is identified by the letters "ZN" moulded at the rear end of the cartridge.

The various combinations are tabulated below, along with the Stock Numbers of pivot arms and springs involved.

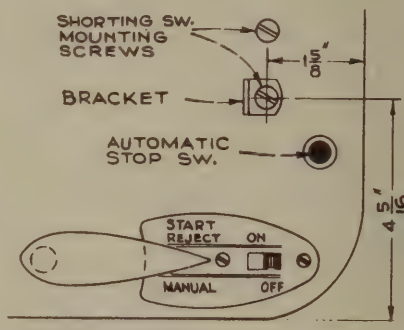
| ARM AND CRYSTAL COMBINATIONS | CORRECT ARM AND SPRING |
|---|---|
| Aluminum arm Stock 38650<br>Aluminum crystal Stock 38453 | Pivot arm Stock 38603<br>Pivot arm spring Stock 30585 |
| Aluminum arm Stock 38650<br>Zinc crystal Stock 39550 | Pivot arm Stock 38603<br>Pivot arm spring Stock 30585 |
| Zinc arm Stock 39671<br>Zinc crystal Stock 39550 | Pivot arm Stock 39672<br>Rivet for arm and spring Stock 39674<br>Pivot arm spring Stock 39754 |
| Zinc arm Stock 39671<br>Aluminum crystal Stock 38453 | Pivot arm Stock 39672<br>Rivet for arm and spring Stock 39674<br>Pivot arm spring Stock 39673 |

### Idler Wheel Fiber Washers:

In order to reduce idler wheel noise, the two metal washers have been replaced by two fiber washers in the Idler Wheel Assembly, Stock No. 36274, for the above record changers. The new fiber washers are Stock No. 39996.

### Tone Arm Stop Bracket:

On 2nd production RP-158 and RP-160, a stop bracket has been added to the top of the motorboard to restrain the tone arm. It is mounted by means of the same screw, lockwasher, and nut used to mount the pickup shorting switch. Where difficulty is experienced with excessive movement of the tone arm on 1st production mechanisms, this bracket may be added as shown. The bracket is Stock No. 39832.

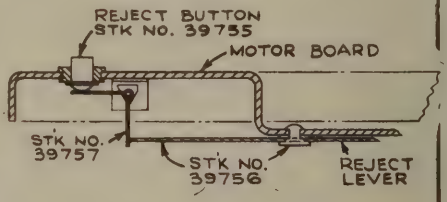



*Tone-arm stop bracket (No. 39832) position on RP-158, -160.*

### Change in Reject Lever and Button:

2nd production of RP-158 and RP-162 automatic record changers have a reject lever arrangement as shown in accompanying sketch.

| Stock No. | Description |
|---|---|
| 39755 | Button—Reject button |
| 39756 | Lever—Reject lever and stud |
| 39757 | Lever—Reject button right angle lever |

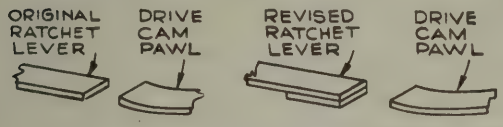



*Revised reject button and lever in RP-158, -162.*

## REVISED RATCHET LEVER

In RP-158, -160, and -162, continuous tripping can be caused by failure of the ratchet lever to block the drive cam pawl at completion of a change cycle.

This has been corrected by doubling the thickness of the end of the ratchet lever so that it presents a broader face to the edge of the drive cam pawl. The lever with double thickness is carried under the same Stock Number (38656) as the original lever, which it supersedes.




*Continuous tripping in RP-158, -160, and -162 can be caused by failure of the rachet lever to block the drive cam pawl. The replacement lever has double thickness at end to present a broader face to the drive cam pawl.*

### Trip Lever and Trip Pawl Spring:

The original bronze trip-pawl spring, Stock No. 38562, is no longer available. When this spring requires replacement, due to loss or irreparable damage, it is necessary to install either a new steel spring, Stock No. 39961, in accordance with instructions given below, or else install a complete new trip lever assembly which employs the steel spring.

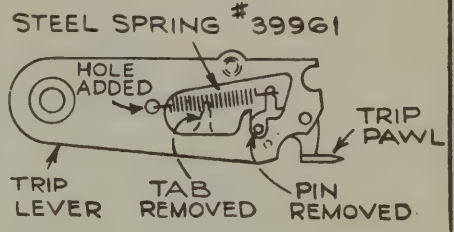
In RP-151, the new trip lever, trip pawl, and steel spring assembly is **Stock No. 38561.**

In RP-158, -160, and -162, the new trip lever, trip pawl, and steel spring assembly is **Stock No. 38632.**

The new lever and spring assemblies will be supplied on orders for the original assemblies.

### Installing Steel Spring No. 39961 on Trip Lever:

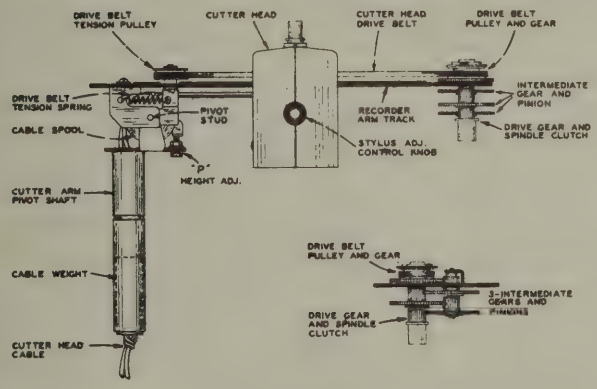
1. Drill a 3/32-inch hole in lever as shown.
2. Cut off the tab that was used to anchor the original bronze spring.
3. Install steel spring as shown.




*Trip lever with new steel spring. This steel spring can be installed on original lever in place of bronze spring by drilling a 3/32 inch hole and cutting off the tab on original lever.*

# Recorder Mechanism Data (RP-161)

Recorder No. RMP-110

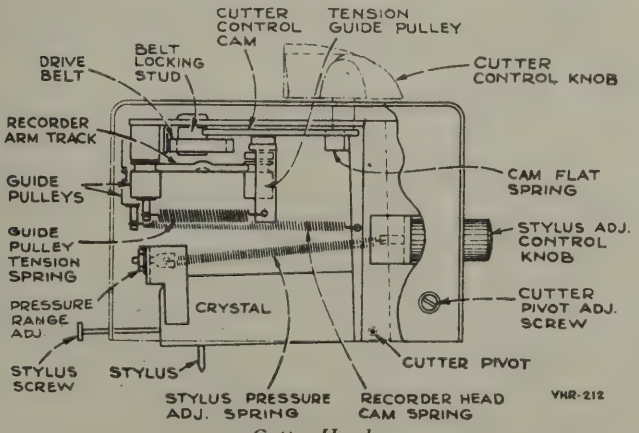



*Cutter Arm*

**Drive:** The cutter head is belt driven from the turntable spindle through the train of gears at the spindle end of the cutter arm. Tension on the drive belt is maintained by a tension pulley at the pivot end of the cutter arm. Two fixed pulleys and one tension pulley guide the cutter head on the recorder arm track.

The cutter arm pivot shaft bearing should be so positioned with reference to the spindle that the spindle clutch fits easily on the spindle and does not bind as the turntable revolves.

Leads from the cutter crystal pass over a wooden pulley and down through the cutter arm pivot shaft, slack being taken up by a cable weight within the pivot shaft. The knot in the leads below the weight should be enclosed by the cavity in the weight so it will not rub or bind against the sides of the pivot shaft. This knot should be so positioned as to allow full movement of the cutter head without allowing the weight to come entirely out of the pivot shaft. Within the cutter head, the leads in the vicinity of the cutter crystal should be free and floating to prevent reaction on the crystal suspension.




*Cutter Head*

**Lubrication:** Lubriplate No. 110 should be used on all gear and pulley studs, pivots, sliding and bearing surfaces of the recorder arm and cutter head. However, **do not** lubricate: the gear teeth, the wooden pulley bearing, the clamping surface of the belt locking stud, or the recorder arm track.

**Cutter Control:** When the cutter control knob is in the "off" position, the cutter control cam, through a lever fastened to the cutter crystal, holds the cutter stylus clear of the recording blank. In the "on" position of the cutter control, the cam allows the cutter crystal and stylus to lower into position for recording and locks the drive belt between the belt locking stud and a lip on the cutter head frame so the cutter head travels with the belt. Correct clamping occurs when the flat cam spring almost touches the bottom of the cam detent. Adjustment of clamping may be accomplished by carefully bending the clamping lip on the cutter frame.

Replace the belt if it shows roughness, wear, or stretching. Keep the belt free of oil, grease, dirt, or other foreign matter.

**Stylus Adjustment Control:** The stylus adjustment control knob increases or decreases the tension of the stylus pressure adjustment spring, thereby opposing to a greater or lesser degree the tension of the recorder head cam spring and the pressure due to the weight of the crystal.

The range of the stylus adjustment control may be adjusted, if necessary, by turning the pressure range adjustment nut. Counter-clockwise increases, clockwise decreases stylus pressure for a given setting of the stylus adjustment control knob.

Correct adjustment of the stylus adjustment control knob for recording is outlined under "Recorder Cutting Adjustments."

**Cutter Pivot Adjustment:** The cutter crystal is supported on cone pivots. Pressure against these pivots is adjusted by the cutter pivot adjustment spreader screw. Correct adjustment is for no play or bind. Adjustment is best accomplished by starting with some play and relaxing the adjusting screw until the play just disappears.

**Recorder Arm Height Adjustment:** Adjust the recorder arm height adjustment screw "P" so that the cutter stylus cannot touch the turntable or the motorboard when the cutter control is on "off" and the recorder arm is suspended freely between the spindle and the cutter arm rest. The screw should not, however, prevent the cutter arm from seating firmly on the spindle. Tighten the locknut after adjustment is made.

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **RP-158, -161, -162** |
| | **PICKUP AND ARM ASSEMBLIES** |
| 38602 | Arm—Pickup arm shell only |
| 38603 | Arm—Pivot arm and shaft—less spring |
| 38610 | Crystal—Pickup crystal cartridge, sapphire and shielded cable |
| 38607 | Cushion—Pusher rod cushion (rubber) (1) |
| 38458 | Nut—Speed nut to hold cable in arm |
| 39387 | Plate—Bottom plate for pickup arm—less screws |
| 38606 | Rod—Pusher rod—less cushion |
| 39564 | Sapphire—Sapphire only |
| 38609 | Screw—No. 4-40 x ¼-in. headless set screw for pickup arm—Pkg. of 5 |
| 38605 | Screw—No. 4-40 x ¼-in. screw to mount crystal—Pkg. of 5 |
| 38611 | Screw—No. 4-40 x 3/16-in. headless set screw for pickup crystal (oval point)—Pkg. of 5 |
| 39388 | Screw—No. 4-40 x 3/16-in. screw for pickup arm bottom plate—Pkg. of 5 |
| 38608 | Screw—No. 6-32 x 9/32-in. headless set screw for pickup arm—Pkg. of 5 |
| 30585 | Spring—Pivot arm spring (3) |
| 38604 | Stud—Pivot arm spring stud and nut |
| | **RP-160** |
| | **PICKUP AND ARM (Aluminum Arm) (Aluminum Case Crystal)** |
| 38650 | Arm—Pickup arm shell (aluminum casting) less crystal, cable, and pivot arm |
| 38603 | Arm—Pivot arm and shaft for pickup arm—less spring |
| 35694 | Cable—Shielded pickup cable—connects pickup to shorting switch |
| 38453 | Crystal—Pickup crystal cartridge with sapphire and holder |
| 38607 | Cushion—Rubber cushion (1) for pickup arm push rod |
| 38451 | Damper—Viscoloid damper for sapphire holder |
| 38452 | Guard—Needle guard |
| 38450 | Nut—Special nut and washer for sapphire holder |
| 38458 | Nut—Speed nut to hold cable in pickup arm |
| 38606 | Rod—Pickup arm push rod—less cushion |
| 38449 | Sapphire—Sapphire and holder—less nut |
| 37763 | Screw—No. 2-56 x 1/8 screw to mount needle guard (2 required) |
| 38609 | Screw—No. 4-40 x 1/4 headless set screw for pickup arm |
| 38608 | Screw—No. 6-32 x 9/32 headless set screw for pickup arm |
| 30585 | Spring—Pivot arm spring (31 turns) (3) |
| 38604 | Stud—Pivot arm spring stud, and nut |
| | **PICKUP AND ARM (Zinc Arm) (Aluminum Case Crystal)** |
| | Same as Pickup and Arm (Aluminum Arm) except: |
| 39671 | Arm—Pickup arm shell (zinc casting)—less crystal, cable, and pivot arm |
| 39672 | Arm—Pivot arm and shaft for pickup arm—less spring |
| 39674 | Rivet—Rivet to hold pivot arm spring—Pkg. of 5 |
| 39673 | Spring—Pivot arm spring (19-1/2 turns) |
| | NOTE: The zinc arm may be identified by the fact that it has a 1/8-in. hole in the back end, for the rivet which holds the pivot arm spring. This hole is not present in the aluminum arm. When replacing an aluminum arm with a zinc arm (Stock No. 39671) it will also be necessary to replace the pivot arm and spring; use Stock No. 39672, Pivot Arm, and Stock No. 39673, Spring. |
| | **RP-161** |
| | **RECORDER ASSEMBLY** |
| 10129 | Ball—3/16-in. dia. steel ball for spindle clutch |
| 39131 | Belt—Recorder head drive belt |
| 39116 | Bracket—Bracket and stud for recorder head guide pulley |
| 39114 | Bracket—Drive belt pulley bracket (tension pulley) |
| 39117 | Bracket—Recorder arm frame bracket |
| 39119 | Cam—Recorder head cam and knob shaft |
| 39108 | Cover—Recorder arm cover |
| 39109 | Cover—Recorder head cover |
| 39110 | Cutter—Recorder head cutter with stylus screw |
| 39113 | Frame—Recorder arm frame |
| 39112 | Frame—Recorder head frame |
| 39135 | Gear—Drive gear and spindle clutch—less ball |
| 39133 | Gear—Intermediate gear and pinion (3 used) |
| 39122 | Knob—Recorder head "On-Off" knob—less screw |
| 39132 | Knob—Stylus adjusting knob |
| 39138 | Nut—Nut, washer, and lockwasher to hold recorder head cover |
| 39125 | Pivot—Recorder arm pivot shaft and bracket |
| 39123 | Plate—Recorder arm bottom plate and drive gear bearing |
| 39128 | Pulley—Drive belt pulley—located at pivot end of arm |
| 39134 | Pulley—Drive belt pulley and gear |
| 39129 | Pulley—Recorder head guide pulley (small—3 used) |
| 39136 | Screw—Recorder arm height adjustment screw and nut |
| 14427 | Screw—Set screw for "On-Off" knob |
| 39111 | Screw—Stylus screw |
| 39126 | Screw—¼-32 special screw for stylus adjustment |
| 39115 | Screw—No. 6-32 x 1¼-in. round head screw to adjust cutter pivot friction or play |
| 39130 | Spool—Recorder cable spool—(wood) |
| 39120 | Spring—Recorder head cam spring |
| 39675 | Spring—Stylus pressure adjusting spring |
| 39677 | Spring—Tension spring for drive belt pulley |
| 39676 | Spring—Tension spring for guide pulley |
| 39121 | Stud—Belt locking stud for recorder head—actuated by cam |
| 39118 | Stud—Recorder arm pivot stud and cable pulley shaft |
| 39137 | Washer—"C" washer to hold drive belt drive pulley |
| 34373 | Washer—"C" washer to hold intermediate drive gears, and drive belt pulley |
| 31608 | Washer—"C" washer to hold large guide pulley bracket, small guide pulleys, and large guide pulley |
| 2917 | Washer—"C" washer to hold recorder head cam shaft |
| 39139 | Washer—1 set flat washers for drive gear mountings |
| 39127 | Weight—Recorder head cable weight |
| | **RP-158** |
| | **MOTOR ASSEMBLIES (50-60 Cycle) (Motor No. 91706-1)** |
| 37108 | Bearing—Bottom bearing and bracket (4) |
| 37107 | Bearing—Top bearing and bracket |
| 37109 | Bracket—Motor mounting bracket (5) |
| 37111 | Coil—Motor field coil assembly (6) |
| 38612 | Motor—105-125 volts, 60 cycle |
| 37106 | Pad—Rotor thrust pad |
| 37110 | Rotor—Motor rotor complete with fan |
| 38847 | Sleeve—Motor spindle sleeve for 50 cycle conversion |
| | **MOTOR ASSEMBLIES (25 Cycle) (Motor No. 91655-3 or 8)** |
| 36954 | Armature—Motor armature and shaft for 25 cycle motor |
| 36952 | Cap—Bakelite cap for motor |
| 36951 | Capacitor—1.25 mfd. for motor (2 required) |
| 36726 | Motor—105-125 volts, 25 cycle |
| | **RP-160** |
| | **MOTOR ASSEMBLIES** |
| 36954 | Armature—Motor armature and shaft for 25 cycle motor |
| 36255 | Armature—Motor armature and shaft for 60 cycle motor |
| 37108 | Bearing—Bottom bearing and bracket (4) |
| 37107 | Bearing—Top bearing and bracket |
| 37109 | Bracket—Motor mounting bracket (5) |
| 36952 | Cap—Bakelite cap for motor |
| 36955 | Capacitor—1.1 mfd. for 60 cycle motor |
| 36951 | Capacitor—1.25 mfd. for motors (2 required for 25 cycles) |
| 37111 | Coil—Motor field coil assembly (6) |
| 36726 | Motor—105-125 volts, 25 cycle, complete with capacitor (91655-3 or 8) |
| 36254 | Motor—105-125 volts, 60 cycle, complete with capacitor (91655-1 or 6) |
| 38612 | Motor—105-125 volts, 60 cycle (91706-1) |
| 37106 | Pad—Rotor thrust pad |
| 37110 | Rotor—Motor rotor complete with fan |
| 38847 | Sleeve—Motor spindle sleeve for 50 cycle conversion of motor No. 91706-1, Stock No. 38612 |
| 38848 | Sleeve—Motor spindle sleeve for 50 cycle conversion of motor No. 91655-1 or 6, Stock No. 36254 |

# Replacement Parts (Continued)

## RP-161

### MOTOR ASSEMBLY

| STOCK No. | DESCRIPTION |
|---|---|
| 39510 | Bearing—Bottom bearing and bracket (4) |
| 39509 | Field—Motor field coils and laminations—105-125 volts, 50/60 cycle (6) |
| 39088 | Motor—105-125 volts, 50/60 cycle |
| 39508 | Pulley—Motor rotor shaft pulley for 50 cycle operation |
| 39507 | Pulley—Motor rotor shaft pulley for 60 cycle operation |
| 39506 | Rotor—Motor rotor and shaft—less pulley |

## RP-162

### MOTOR ASSEMBLY (No. 91647-5)

| STOCK No. | DESCRIPTION |
|---|---|
| 39031 | Motor—105-125 volts, 60 cycle |
| 38850 | Sleeve—Motor spindle sleeve for 50 cycle conversion |

## RP-158

### MOTORBOARD ASSEMBLIES

| STOCK No. | DESCRIPTION |
|---|---|
| 38640 | Arm—Motor idler arm—less wheel |
| 3658 | Ball—3/32-in. steel ball for tone arm bearing (7) |
| 10129 | Ball—Bearing ball for spindle |
| 38647 | Bearing—Turntable spindle bearing |
| 38616 | Belt—Record support to separator belt (8) |
| 38644 | Board—Motorboard complete with all riveted and welded posts, studs, bearings, and support |
| 38630 | Brace—Angle brace, or bottom support bracket and spindle bearing plate |
| 38620 | Bushing—Record separator shaft end bushing |
| 38638 | Button—Reject button |
| 38627 | Cam—Drive shaft cam and pawl—less spring |
| 38641 | Cam—Main cam |
| 38646 | Cam—Record support shaft cam |
| 38470 | Cap—Record separator cap (9) |
| 38657 | Disc—Turntable drive disc and spindle—less rubber tire and turntable |
| 38463 | Drum—Record separator belt drum |
| 38617 | Drum—Record support belt drum |
| 38639 | Escutcheon—Index escutcheon |
| 34368 | Grommet—Rubber grommet for motor mounting (10) |
| 38467 | Knife—Record separator knife |
| 38622 | Lever—Link and lever assembly—fastens on record separator shaft |
| 38656 | Lever—Ratchet lever |
| 38637 | Lever—Reject lever |
| 38633 | Lever—Tone arm lever |
| 38631 | Lever—Tone arm lift lever |
| 38618 | Lever—Tone arm return lever |
| 38619 | Lever—Tone arm segment—fastens on record separator shaft—less screw |
| 38632 | Lever—Trip lever—less pawl spring |
| 33225 | Nut—Speed nut for reject button (11) |
| 38740 | Pin—Drive pin for record separator shaft (12) end bushing |
| 38474 | Pin—Record support shaft cam pin (13) |
| 30870 | Plug—2-prong male for motor and switch leads |
| 38624 | Ratchet—Ratchet wheel for turntable spindle (14) |
| 38469 | Screw—Oval head screw for record separator cap (2) |
| 38626 | Screw—No. 8-32 x ¼-in. cone point set screw for ratchet wheel |
| 38625 | Screw—No. 8-32 x ¼-in. set screw for ratchet wheel |
| 31118 | Screw—No. 10-32 x 5/16-in. cone point set screw for record separator crank trip lever, and drum |
| 32869 | Screw—No. 10-32 x 5/16-in. set screw for drum, tone arm segment, record separator crank, and trip lever |
| 38652 | Shelf—Record separator shelf and shaft |
| 38471 | Spacer—Record separator spacer (washer) |
| 38628 | Spring—Cam pawl and ratchet lever spring |
| 30585 | Spring—Motor idler arm spring |
| 38643 | Spring—Motor tension spring (15) |
| 38635 | Spring—Ratchet lever spring (16) |
| 38642 | Spring—Record separator belt drum spring (17) |
| 38621 | Spring—Record separator shaft bottom spring (18) |
| 38468 | Spring—Record separator spring (19) |
| 39554 | Spring—Reject button spring |
| 38636 | Spring—Reject lever spring |
| 38634 | Spring—Tone arm lever spring (20) |
| 39038 | Spring—Tone arm return lever spring |
| 38562 | Spring—Trip lever pawl spring (21) |
| 38645 | Support—Record support and shaft (left hand front post) |
| 38648 | Support—Separator support (2 used) (22) |
| 32875 | Switch—"On-Off" switch |
| 38615 | Swivel—Record separator swivel and shaft |
| 37873 | Tire—Rubber tire only for drive disc |
| 38623 | Turntable—Turntable finished plate only |
| 33726 | Washer—"C" washer for motor idler arm or idler wheel |
| 20165 | Washer—"C" washer for ratchet lever, tone arm lift lever, or tone arm lift rod (23) |
| 2917 | Washer—"C" washer for tone arm lever, tone arm return lever, record support belt drum, link, or cam (24) |
| 38560 | Washer—Felt washer for tone arm bearing |
| 38629 | Washer—Felt washer for turntable spindle bottom bearing |
| 36274 | Wheel—Motor idler wheel |

## RP-160

### MOTORBOARD ASSEMBLIES

| STOCK No. | DESCRIPTION |
|---|---|
| 38640 | Arm—Motor idler arm—less wheel |
| 3658 | Ball—3/32 steel ball for tone arm bearing (7) |
| 10129 | Ball—Bearing ball for spindle |
| 38647 | Bearing—Turntable spindle bearing |
| 38616 | Belt—Record support to separator belt (8) |
| 38653 | Board—Motorboard with all welded or riveted studs, posts, or bearings — less operating mechanism |
| 38630 | Brace—Angle brace, or bottom support bracket and bearing plate |
| 38620 | Bushing—Record separator shaft end bushing |
| 38668 | Button—Stop switch button |
| 39386 | Cable—Shielded pickup cable and plug—connects shorting switch to amplifier |
| 38627 | Cam—Drive shaft cam and pawl—less spring |
| 38641 | Cam—Main cam |
| 38646 | Cam—Record support shaft cam |
| 38470 | Cap—Record separator cap (9) |
| 38665 | Cover—Stop switch cover and stud |
| 38657 | Disc—Turntable drive disc and spindle |
| 38463 | Drum—Record separator belt drum |
| 38617 | Drum—Record support belt drum |
| 38660 | Escutcheon—Index escutcheon ("Manual," "Automatic," "Start-Reject") |
| 34368 | Grommet—Rubber grommet for motor mounting (10) |
| 38467 | Knife—Record separator knife |
| 39106 | Lever—Index control lever and shaft |
| 38622 | Lever—Link and lever assembly—fastens on record separator shaft |
| 38661 | Lever—Manual lever |
| 38656 | Lever—Ratchet lever |
| 38633 | Lever—Tone arm lever |
| 38631 | Lever—Tone arm lift lever |
| 38618 | Lever—Tone arm return lever |
| 38619 | Lever—Tone arm segment—fastens on record separator shaft—less screws |
| 38632 | Lever—Trip lever—less pawl spring |
| 32943 | Nut—Speed nut for stop switch button |
| 38740 | Pin—Drive pin for record separator shaft and bushing |
| 38474 | Pin—Record support shaft cam pin (13) |
| 38663 | Plate—Index control lever plate and screw |
| 30868 | Plug—Female plug for motor extension cable |
| 30870 | Plug—Male plug for motor and switch leads and extension cable |
| 38624 | Ratchet—Ratchet wheel (drive cam sprocket) for turntable spindle (14) |
| 38469 | Screw—Oval head screw for record separator cap (2) |
| 38626 | Screw—No. 8-32 x ¼ in. cone point set screw for ratchet wheel (drive cam sprocket) |
| 38625 | Screw—No. 8-32 x ¼ in. set screw for ratchet wheel (drive cam sprocket) |
| 31118 | Screw—No. 10-32 x 5/16 in. cone point set screw for index lever plate |
| 32869 | Screw—No. 10-32 x 5/16 in. set screw for drum, tone arm segment, record separator crank, and trip lever |
| 38652 | Shelf—Record separator shelf and shaft |
| 38471 | Spacer—Record separator spacer (washer) |
| 33628 | Spring—Cam pawl and ratchet lever spring |
| 38669 | Spring—Index lever plate spring |
| 30585 | Spring—Motor idler arm spring |
| 38643 | Spring—Motor tension spring (15) |
| 39679 | Spring—Ratchet lever spring (16) |
| 38642 | Spring—Record separator belt drum spring (17) |
| 38621 | Spring—Record separator shaft bottom spring (18) |
| 38468 | Spring—Record separator spring (19) |
| 39554 | Spring—Reject button spring |
| 38634 | Spring—Tone arm lever spring (20) |
| 39038 | Spring—Tone arm return lever spring |
| 38667 | Spring—Tone arm switch spring |
| 38562 | Spring—Trip level pawl spring |
| 38666 | Stud—Tone arm switch pivot stud |
| 38645 | Support—Record support and shaft |
| 39085 | Support—Separator support (2 used) (22) |
| 32875 | Switch—"On-Off" switch |
| 38844 | Switch—Pickup shorting switch |
| 38664 | Switch—Stop switch—less leads |
| 38615 | Swivel—Record separator swivel and shaft |
| 37873 | Tire—Rubber tire only for drive disc |

# RP-158, RP-160, RP-161, RP-162

## Replacement Parts (concluded)

| STOCK NO. | DESCRIPTION |
|---|---|
| 38623 | Turntable—Finished turntable plate |
| 33726 | Washer—"C" washer for motor idler arm or idler wheel |
| 20165 | Washer—"C" washer for ratchet lever, tone arm lift lever, or tone arm lift rod (23) |
| 2917 | Washer—"C" washer for tone arm lever, tone arm return lever, record support belt drum, link, or cam (24) |
| 38560 | Washer—Felt washer for tone arm bearing |
| 38629 | Washer—Felt washer for turntable spindle bottom bearing |
| 36274 | Wheel—Motor idler wheel |

### RP-161

#### MOTORBOARD ASSEMBLY

| | |
|---|---|
| 10129 | Ball—3/16-in. dia. steel ball for bottom spindle |
| 3658 | Ball—3/32-in. steel ball for tone arm bearing (7) |
| 39101 | Base—Recorder arm base |
| 39092 | Bearing—Turntable spindle bearing |
| 38616 | Belt—Record support to separator belt (8) |
| 39091 | Board—Motorboard with all riveted and welded posts, studs, and bearings—less all operating parts |
| 39098 | Brace—Angle brace, or bottom support bracket and bearing plate |
| 36832 | Bracket—Idler wheel bracket and stud |
| 39105 | Bushing—Collar to hold idler wheel bracket—less screws |
| 38620 | Bushing—Separator shaft end bushing |
| 39097 | Cam—Drive shaft cam and pawl—less spring |
| 38641 | Cam—Main cam |
| 38646 | Cam—Record support cam |
| 38470 | Cap—Record separator cap (9) |
| 30340 | Clip—Retaining clip for idler wheel |
| 39104 | Clip—Retaining clip for record arm pivot shaft |
| 38463 | Drum—Record separator belt drum |
| 38617 | Drum—Record support belt drum |
| 38660 | Escutcheon—Index lever escutcheon |
| 38467 | Knife—Record separator knife |
| 38663 | Lever—Index lever and bushing and screw |
| 39106 | Lever—Index control lever and shaft |
| 38622 | Lever—Link and lever assembly—fastens on separator shaft |
| 38661 | Lever—Manual lever |
| 38656 | Lever—Ratchet lever |
| 38633 | Lever—Tone arm lever |
| 38631 | Lever—Tone arm lift lever |
| 39751 | Lever—Tone arm return lever and spring |
| 38619 | Lever—Tone arm segment—fastens on separator shaft—less screw |
| 38632 | Lever—Trip lever—less pawl spring |
| 39103 | Mounting—Motor mounting hardware (3 req'd) |
| 38474 | Pin—Drive pin for record support cam (13) |
| 38740 | Pin—Drive pin for separator shaft end bushings |
| 39094 | Pin—Recording pin for turntable |
| 30870 | Plug—2 prong male for motor cable |
| 39511 | Plug—2 prong male for recorder cable |
| 39096 | Ratchet—Ratchet wheel for turntable spindle (14) |
| 39102 | Rest—Recorder head rest |
| 38469 | Screw—Oval head screw for separator cap (2) |
| 38626 | Screw—No. 8-32 x ¼-in. cone point set screw for ratchet wheel |
| 38625 | Screw—No. 8-32 x ¼-in. set screw for ratchet wheel |
| 31118 | Screw—No. 10-32 x 5/16-in. cone point set screw for drum, separator link, trip lever, and index lever |
| 32869 | Screw—No. 10-32 x 5/16-in. set screw for drum, separator link, trip lever, and tone arm segment |
| 38652 | Shelf—Record separator shelf and shaft |
| 38471 | Spacer—Record separator spacer (washer) |
| 39099 | Spindle—Turntable spindle and ball—lower section only |
| 39100 | Spindle—Turntable spindle—top section only |
| 39678 | Spring—Idler arm tension spring |
| 38669 | Spring—Index lever spring (riveted to motorboard) (26) |
| 38628 | Spring—Main cam pawl spring |
| 38635 | Spring—Ratchet lever spring (16) |
| 38468 | Spring—Record separator spring (19) |
| 39095 | Spring—Recording pin spring for turntable |
| 38642 | Spring—Separator belt drum spring (17) |
| 38621 | Spring—Separator shaft bottom spring (18) |
| 38634 | Spring—Tone arm lever spring (20) |
| 39038 | Spring—Tone arm return lever spring (25) |
| 39961 | Spring—Trip lever pawl spring (21) |
| 38648 | Support—Record separator support (2 used) (22) |
| 38645 | Support—Record support and shaft |
| 32875 | Switch—Motor "On-Off" switch |
| 38615 | Swivel—Record separator swivel and bearing |
| 39093 | Turntable—Record turntable complete with recording pin |
| 20165 | Washer—"C" washer for ratchet lever, tone arm lift lever, or tone arm push rod (23) |
| 2917 | Washer—"C" washer tone arm lever, tone arm return lever, record support belt drum, link lever, or cam (24) |
| 38560 | Washer—Felt washer for tone arm bearing |
| 38629 | Washer—Felt washer for turntable bottom bearing |
| 36831 | Wheel—Idler wheel |

### RP-162

#### MOTORBOARD ASSEMBLY

| | |
|---|---|
| 36402 | Arm—Idler wheel arm and stud |
| 10129 | Ball—3/16-in. dia. steel ball for turntable spindle |
| 3658 | Ball—3/32-in. dia. steel ball for pickup arm bearing (7) |
| 38648 | Bearing—Record separator support and bearing |
| 38647 | Bearing—Turntable spindle bearing |
| 39032 | Board—Motorboard with all riveted and welded posts, studs, and bearings—less all operating parts |
| 38630 | Brace—Motorboard bottom brace and bracket |
| 38638 | Button—Reject button |
| 38627 | Cam—Cam and pawl |
| 38641 | Cam—Main cam and gear |
| 38470 | Cap—Record separator cap (9) |
| 4288 | Connector—Pickup lead connector—less insert |
| 38639 | Escutcheon—Index escutcheon |
| 4286 | Ferrule—Pickup connector ferrule (insert) |
| 39039 | Grommet—Rubber grommet for motor mounting (1 set) |
| 38656 | Lever—Ratchet lever |
| 38637 | Lever—Reject lever |
| 38633 | Lever—Tone arm lever |
| 38631 | Lever—Tone arm lift lever |
| 38618 | Lever—Tone arm return lever |
| 38632 | Lever—Trip lever |
| 39036 | Link—Record separator link |
| 33225 | Nut—Speed nut for reject button |
| 38740 | Pin—Drive pin for record separator shaft |
| 30870 | Plug—Male plug for motor leads |
| 38624 | Ratchet—Ratchet wheel (clutch sprocket) (14) less screws |
| 38469 | Screw—Record separator cap screw (2) |
| 38626 | Screw—No. 8-32 x ¼-in. cone point screw for ratchet wheel |
| 38625 | Screw—No. 8-32 x ¼-in. screw for ratchet wheel |
| 31118 | Screw—No. 10-32 x 5/16-in. cone point screw for link and trip lever |
| 32869 | Screw—No. 10-32 x 5/16-in. screw for link and trip lever |
| 38467 | Separator—Record separator knife only |
| 39035 | Shelf—Record separator shelf and shaft |
| 38471 | Spacer—Record separator shelf to knife spacer |
| 38628 | Spring—Cam pawl spring |
| 30585 | Spring—Idler wheel arm spring |
| 38635 | Spring—Ratchet lever spring (16) |
| 38468 | Spring—Record separator spring (19) |
| 38636 | Spring—Reject lever spring |
| 39680 | Spring—Spring for under reject button |
| 38634 | Spring—Tone arm lever spring (20) |
| 39038 | Spring—Tone arm return lever spring |
| 38562 | Spring—Trip pawl spring (21) |
| 39033 | Support—Record support |
| 32875 | Switch—"On-Off" switch |
| 39034 | Swivel—Record separator swivel |
| 39037 | Turntable—Record turntable and spindle |
| 33726 | Washer—"C" washer for idler wheel |
| 20165 | Washer—"C" washer for ratchet lever, tone arm lever, or pickup pivot shaft (23) |
| 2917 | Washer—"C" washer for tone arm return lever, tone arm lever, link, or cam (24) |
| 38560 | Washer—Felt washer for pickup arm bearing |
| 38629 | Washer—Felt washer for turntable spindle bottom bearing |
| 36274 | Wheel—Idler wheel |

# MODEL V-170

## Chassis No. RC-523

## Six-Tube, Two-Band, A-C, Radio Phonograph Combination

### Electrical and Mechanical Specifications

FREQUENCY RANGES

Broadcast "A" ..... 540-1,600 kc
Short Wave "C" ..... 6-18.0 mc

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

(1) RCA-6SA7 ..... 1st Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6H6 ..... 2nd Detector, A.V.C.
(4) RCA-6SF5 ..... A-F Amplifier
(5) RCA-6K6GT ..... Power Output
(6) RCA-5Y3-G ..... Rectifier

POWER OUTPUT RATING

Undistorted ..... 2.5 watts
Maximum ..... 4.5 watts

LOUDSPEAKER (RL-70L-5)

Type ..... 12-inch Electrodynamic
V.C. Impedance ..... 2.2 ohms at 400 cycles

PHONOGRAPH

Type ..... Automatic
Record Capacity ..... Eight 10-inch or Seven 12-inch
Turntable Speed ..... 78 r.p.m.
Type Pickup ..... Crystal
Pickup Impedance ..... 100,000 ohms at 1,000 cycles
Average Output ..... 1½ volts at 1,000 cycles across ½ meg.

POWER SUPPLY RATINGS

105-125 volts, 60 cycles, 110 watts
105-125 volts, 25 cycles, 110 watts

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions (inches) ..... | 33-3/16 | 29⅝ | 17½ |

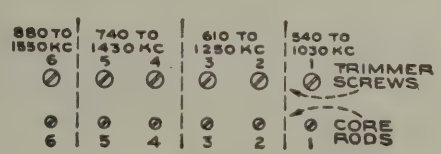
Weight ..... 72 lbs. (net)
Tuning Drive Ratio ..... 12-1

### Push Button Adjustments

The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

The procedure is as follows:

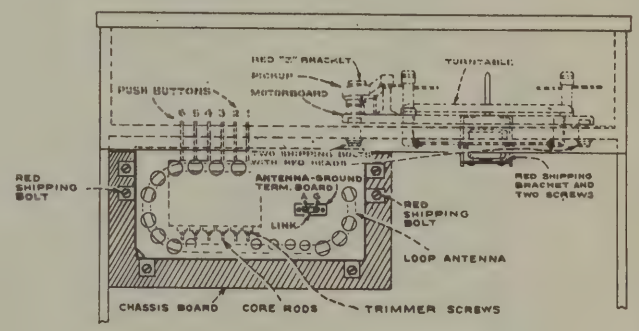
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast position and manually tune in the first station on the list.
3. Turn range switch to push-button position and press in the left-hand button.
4. Adjust L10 to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust L10 for peak output.
5. Adjust C45 for peak output on the first station.

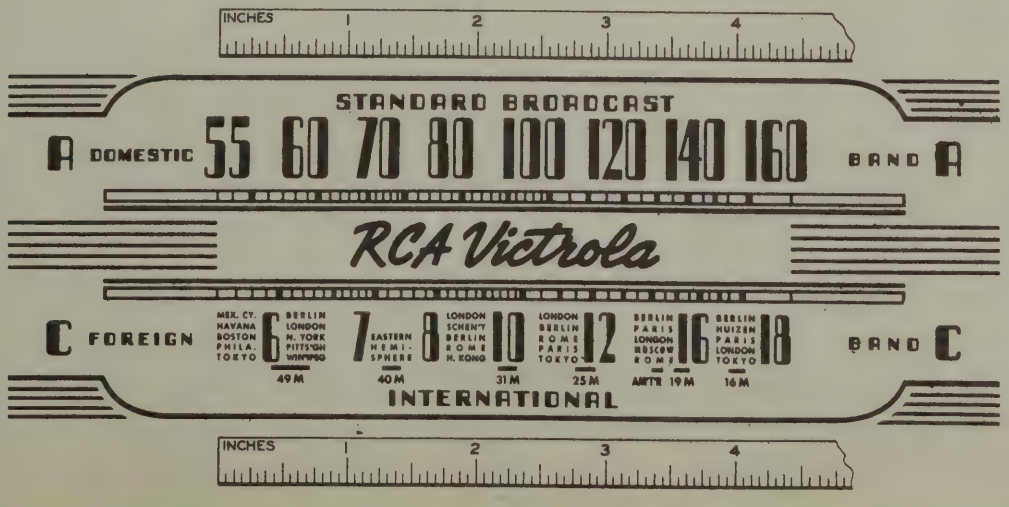



6. Proceed in the same manner to adjust for the remaining stations.

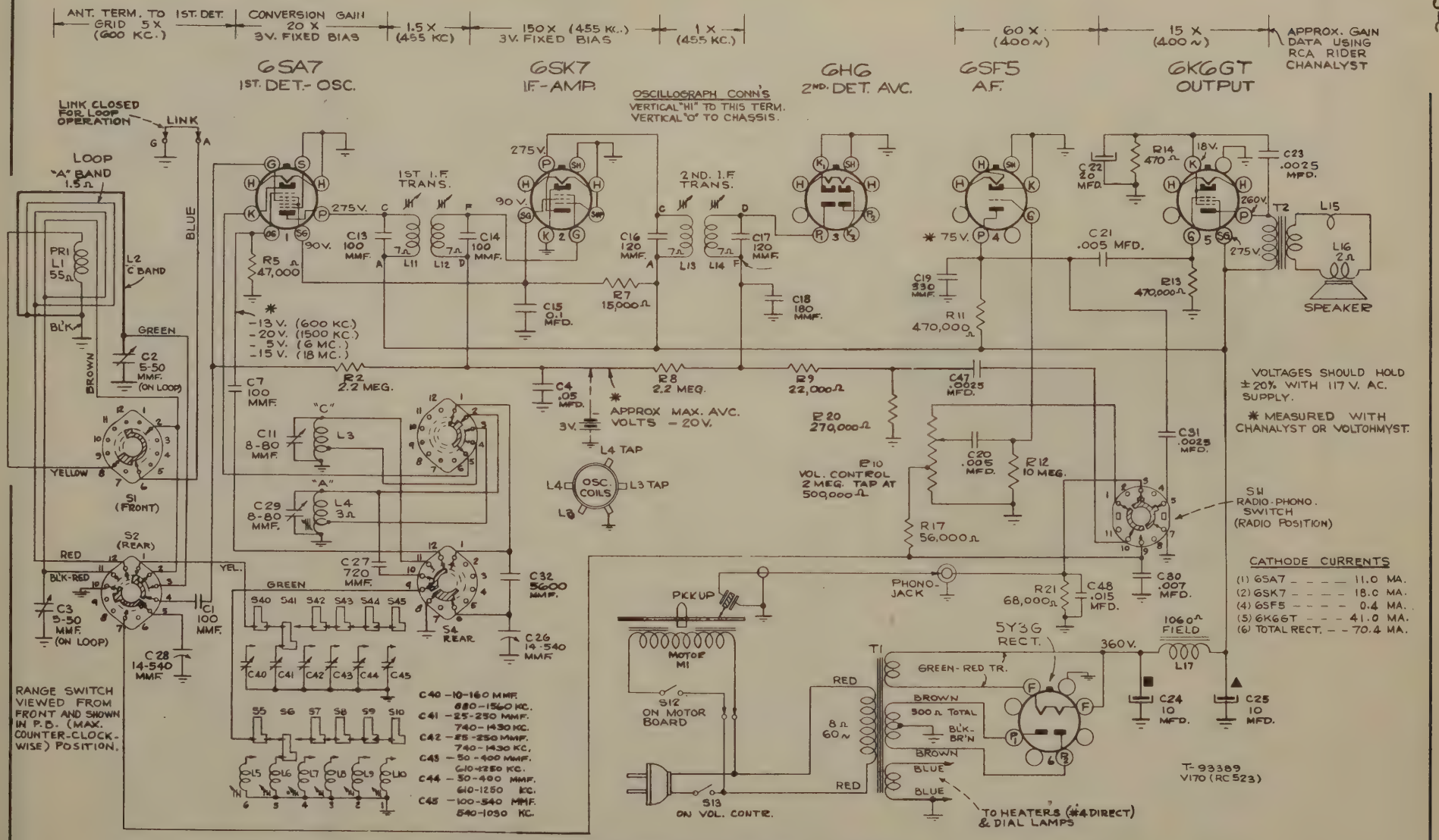
On the 880 to 1,560 kc push-button, the higher frequency stations may be received with L5 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

**NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**



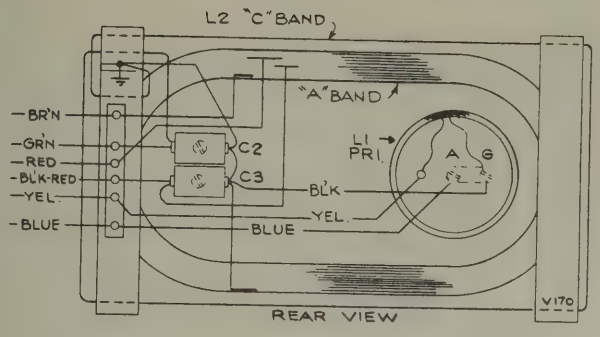




**Refer to RP-152 Service Data for information on Record-Changer Mechanism.**




The R-F and I-F gain measurements are made using a 3-volt battery connected from the A.V.C. bus to chassis as shown in dotted lines.

# Alignment Procedure




**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

Each method is described below.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

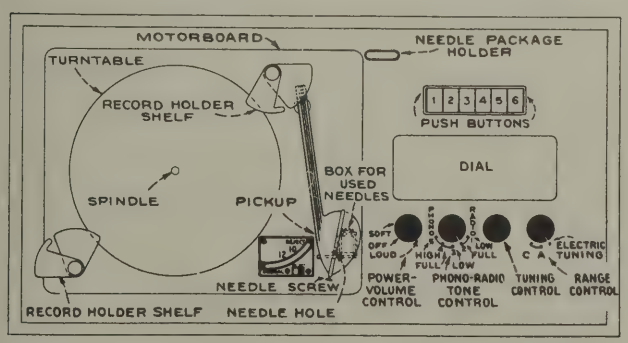
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

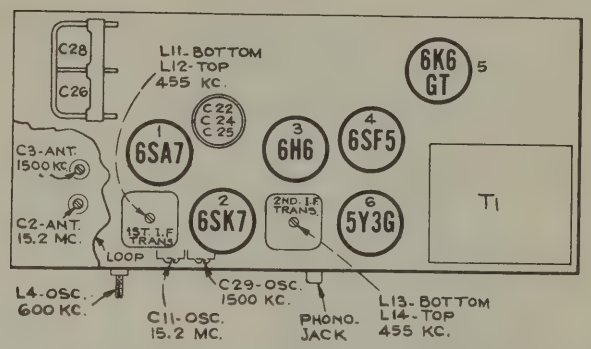
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.



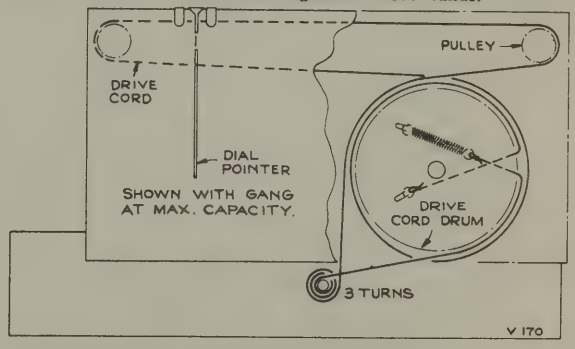

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale.

**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

| Steps | Connect the high side of the test-osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for max. peak output— |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | "C" band, Quiet Point at H-F end of dial | L13 and L14 (2nd I.F. Trans.) |
| 2 | 1st. det. grid, in series with .01 mfd. | | | L11 and L12 (1st I.F. Trans.) |
| 3 | Antenna terminal, in series with 300 ohms (link open) | 15.2 mc | 15.2 mc "C" band | C11 (osc.)* C2 (ant.) Rock in C2 |
| 4 | Antenna terminal, in series with 200 mmfd. (link open) | 1,500 kc | 1,500 kc "A" band | C29 (osc.) C3 (ant.) |
| 5 | | 600 kc | 600 kc "A" band | L4 (osc.) Rock in |
| 6 | Repeat steps 4 and 5. | | | |

* Use **minimum** capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used, by tuning receiver to 14.29 mc, where a weaker signal should be received.

Note: Oscillator tracks above signal on both bands.




## Rumble:

Rumble is related to motor vibration, combined with high-gain amplifier, and prominent bass response.

The vibration of the motor in these instruments is as low as it can be made: Do not replace it to correct rumble. Rather, reduce the low-frequency response by shunting a 50,000-ohm ½-watt resistor across the crystal pickup terminals.

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

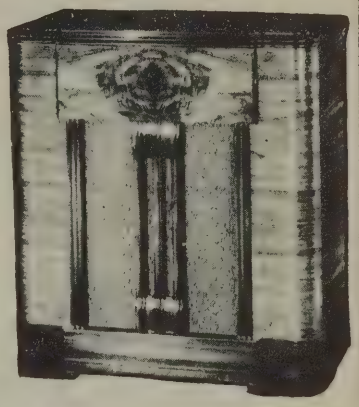
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-523)** |
| 34785 | Board—"Antenna-Ground" board |
| 36485 | Capacitor—Mica trimmer—2 sections of 5-50 mmf. |
| 35867 | Capacitor—Mica trimmer—2 sections of 8-80 mmf. each |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmf., 2 sections of 25-250 mmf., 2 sections of 50-400 mmf., and 1 section of 100-540 mmf. |
| 34699 | Capacitor—100 mmf., mica |
| 12720 | Capacitor—100 mmf., moulded mica |
| 34700 | Capacitor—120 mmf. |
| 13003 | Capacitor—180 mmf. |
| 12952 | Capacitor—330 mmf. |
| 35877 | Capacitor—720 mmf. |
| 13895 | Capacitor—5,600 mmf. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 35858 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 400 volts, and 1 section of 20 mfd., 25 volts |
| 35785 | Coil—Loop primary coil |
| 35854 | Coil—Oscillator coil |
| 35803 | Coil—P.B. oscillator coil |
| 37133 | Coil—P.B. oscillator coil, 540-1,030 kc |
| 35874 | Condenser—Variable tuning condenser |
| 36487 | Control—Tone control |
| 36486 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord |
| 35788 | Core—Adjustable core and stud for oscillator coils |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 35870 | Indicator—Station selector indicator |
| 36484 | Loop—Antenna loop complete |
| 36482 | Plate—Dial plate complete with drive cord pulleys less dial |
| 30868 | Plug—2-contact female plug for motor cable |
| 5119 | Plug—3-contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulley |
| 30681 | Resistor—470 ohms, 1 watt |
| 35595 | Resistor—15,000 ohms, 3 watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 12285 | Resistor—470,000 ohms, ½ watt |
| 12679 | Resistor—2.2 megohm, ½ watt |
| 13601 | Resistor—10 megohm, ½ watt |
| 35862 | Shaft—Tuning shaft |
| 35772 | Shield—Power transformer bottom shield |
| 35709 | Shield—Power transformer top shield |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36489 | Switch—Push button selector switch |
| 36488 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer, 110 volt, 25 cycle |
| 35959 | Transformer—Power transformer, 110 volt, 50-60 cycle, less end shields |
| 33726 | Washer—"C" washer for tuning shaft |
| | **FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON RP-152.** |
| | **SPEAKER ASSEMBLIES (RL-70-L5)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil, 1,060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 31301 | Output—Transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36461 | Button—Plug button |
| 36299 | Button—Push button |
| 13103 | Cap—Pilot lamp cap |
| 36328 | Cover—Compartment lamp leads cover |
| 36711 | Decalcomania—Control panel decal |
| 35393 | Decalcomania—Television decal |
| 36386 | Decalcomania—Trade mark decal |
| 35467 | Decalcomania—Trade mark decal |
| 36710 | Dial—Glass dial scale |
| 35937 | Escutcheon—Dial scale escutcheon, less dial |
| 36027 | Escutcheon—Push button escutcheon, less buttons |
| 30698 | Hinge—Cabinet lid hinge |
| 36246 | Holder—Needle book holder |
| 36297 | Knob—Range switch or tone control knob |
| 36298 | Knob—Volume control or tuning knob |
| 11765 | Lamp—Dial lamp |
| 5117 | Lamp—Compartment lamp |
| 36149 | Marker—Station selector marker |
| 31470 | Mounting—Complete set of mounting hardware for 1 motorboard |
| 35740 | Shade—Compartment lamp shade |
| 35575 | Spring—Lid support spring |
| 30900 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push button |
| 36693 | Support—Cabinet lid support |

# MODEL V-175

**Chassis No. RC-582**

## Six-Tube, Two-Band, AC, Superheterodyne Receiver and Phonograph

### Electrical and Mechanical Specifications



FREQUENCY RANGE

Standard Broadcast (A).. ..... 540-1,600 kc
Short Wave (C)..... ..... 9.4-15.4 mc
Intermediate Frequency... ..... 455 kc

(1) RCA-6SK7..... R-F Amplifier
(2) RCA-6SA7..... 1st Det. Oscillator
(3) RCA-6SK7..... I-F Amplifier
(4) RCA-6SQ7..... 2nd Det., A.V.C., A-F Amplifier
(5) RCA-25L6-GT..... Power Output
(6) RCA-25Z6-GT..... Rectifier

Pilot Lamp..... (1)—Mazda No. 47, 6-8 volts, 0.15 amps.

POWER OUTPUT RATING

Undistorted..... 3 watts
Maximum..... 5 watts

LOUDSPEAKER (RL-70-N2)

Type..... 12 inch electrodynamic
V.C. Impedance..... 2.2 ohms at 400 cycles

POWER SUPPLY RATING

105-125 volts, 60 cycles..... 80 watts total

AUTOMATIC PHONOGRAPH (RP-158)

Type Pickup..... Crystal
Record capacity..... Twelve 10-inch or ten 12-inch records
Constant speed motor..... 17 watts

### Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagrams.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the common negative wiring, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed full size in this service note can be used as an accurate and convenient substitute for the regular dial.

Each method is described below.

**Using Tuning Dial.—**

1. Remove the glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.
4. After completion of alignment, replace the glass dial in cabinet.

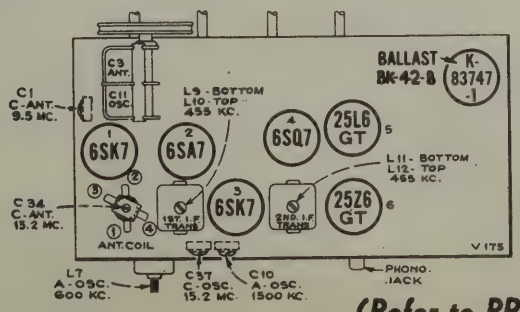
**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
2. Temporarily fasten the dial scale drawing in this service note, to the dial backing plate with scotch tape, so that the extreme left scale graduation coincides with the pointer.

**Dial Pointer Adjustment.**—After the chassis is replaced in cabinet move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F Grid in series with .01 mfd. | 455 kc | "A" Band 540 kc | L11, L12 (2nd I-F Trans.) |
| 2 | 1st-Det. Grid in series with .01 mfd. | | | L9, L10 (1st I-F Trans.) |
| 3 | "A" terminal on ant. terminal board in series with 47 mmf. (link open) | 15.2 mc | "C" Band 15.2 mc | C37 (osc.)* C34 (ant.) |
| 4 | | 9.5 mc | "C" Band 9.5 mc | C1 (ant.) (Rock Gang) |
| 5 | | Repeat steps 3 and 4. | | |
| 6 | Middle terminal on ant. terminal board in series with 200 mmf. (link open) | 1,500 kc | "A" Band 1,500 kc | C10 (osc.) C33 (ant.) (on loop) |
| 7 | | 600 kc | "A" Band 600 kc | L7 (Rock Gang) |
| 8 | | Repeat steps 6 and 7. | | |

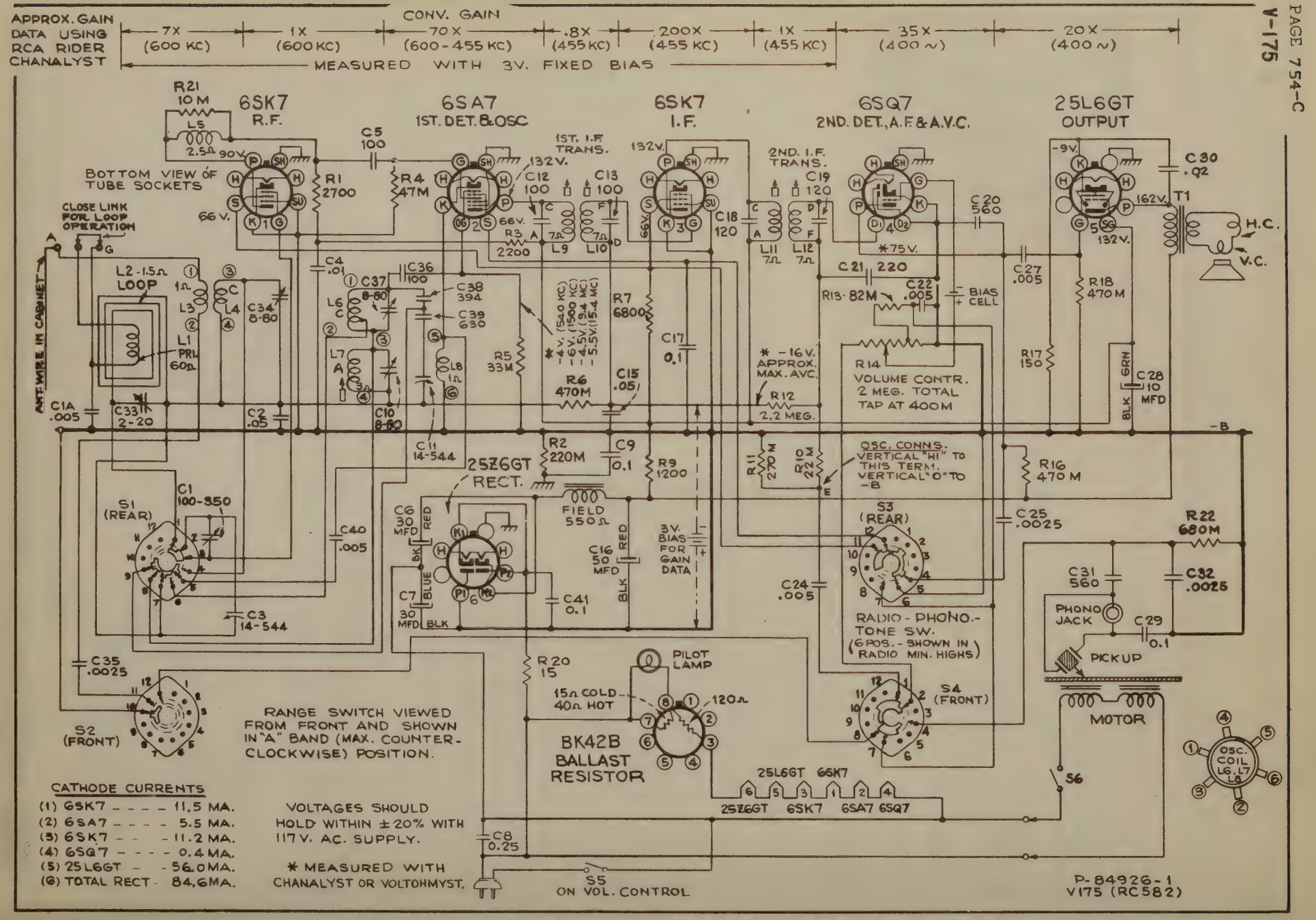
* Use minimum capacity peak.
Oscillator tracks 455 kc above signal on both bands.

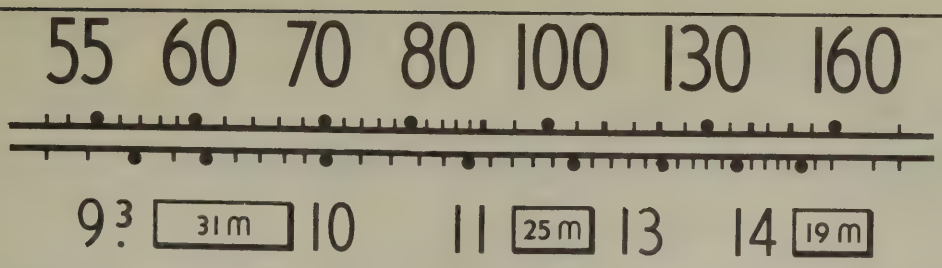



**Critical Lead Dress**

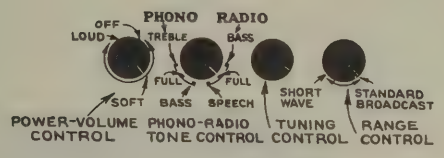
(1) Dress bias cell up from chassis and away from A.C. switch.
(2) Dress R13 (volume control compensation circuit) close to front apron.
(3) Dress C9 between osc. coil and side apron.
(4) Black lead from AC switch should be kept away from tone control leads and switch.
(5) Dress R22, C32 (pickup compensation circuit) close to front apron.
(6) Keep R4 and C5 bus (1st det. grid circuit) (socket end) as short as possible.
(7) Blue lead to antenna terminal board should be dressed in back of I-F'S.
(8) Dress brown lead from volume control to tone switch close to front apron.
(9) Dress R18 (output grid cricuit) away from A.C. switch and A.C. leads.
(10) Dress lead to phono. socket up from chassis.

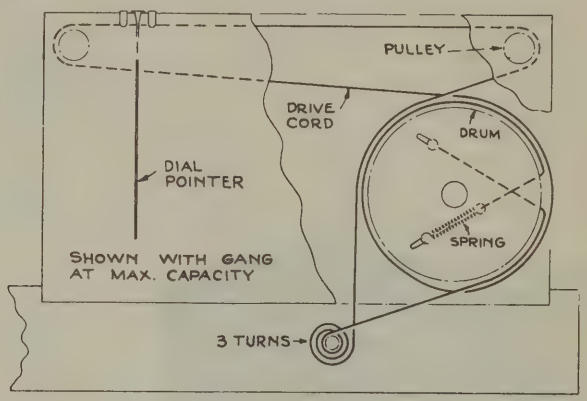
***(Refer to RP-158 Service Note for Data on Automatic Mechanism)***


APPROX. GAIN DATA USING RCA RIDER CHANALYST
CONV. GAIN
7X (600 KC)
1X (600 KC)
70X (600-455 KC)
.8X (455 KC)
200X (455 KC)
1X (455 KC)
35X (400 ~)
20X (400 ~)
MEASURED WITH 3V. FIXED BIAS
6SK7 R.F.
6SA7 1ST. DET. & OSC
6SK7 I.F.
6SQ7 2ND. DET., A.F. & A.V.C.
25L6GT OUTPUT
BOTTOM VIEW OF TUBE SOCKETS
CLOSE LINK FOR LOOP OPERATION
ANT. WIRE IN CABINET
L2 - 1.5Ω LOOP
L1 PRI 60Ω
L3
L4
L5
L6
L7
L8
L9
L10
L11
L12
T1
H.C.
V.C.
R1 2700
R2 220M
R3 2200
R4 47M
R5 33M
R6 470M
R7 6800
R9 1200
R10 2M
R11 2M
R12 2.2 MEG.
R13 82M
R14 VOLUME CONTR. 2 MEG. TOTAL TAP AT 400M
R15 2M
R16 470 M
R17 150
R18 470 M
R20 15
R21 10 M
R22 680M
C1 100-350
C1A .005
C2 .05
C3 14-544
C4 .01
C5 100
C6 30 MFD
C7 30 MFD
C8 0.25
C9 0.1
C10 8-80
C11 14-544
C12 100
C13 100
C15 .05
C16 50 MFD
C17 0.1
C18 120
C19 120
C20 560
C21 220
C22 .005
C24 .005
C25 .0025
C27 .005
C28 10 MFD
C29 0.1
C30 .02
C31 560
C32 .0025
C33 2-20
C34 8-80
C35 .0025
C36 100
C37 8-80
C38 394
C39 630
C40 .005
C41 0.1
S1 (REAR)
S2 (FRONT)
S3 (REAR)
S4 (FRONT)
S5 ON VOL. CONTROL
S6
25Z6GT RECT.
FIELD 550Ω
3V. BIAS FOR GAIN DATA
* -16V. APPROX. MAX. AVC.
* 4 V. (540 KC) -6 V. (1500 KC) -4.5 V. (9.4 MC) -5.5 V. (15.4 MC)
OSC. CONNS. VERTICAL "HI" TO THIS TERM. VERTICAL "O" TO -B
RADIO - PHONO. - TONE SW. (6 POS. - SHOWN IN RADIO MIN. HIGHS)
PHONO JACK
PICKUP
MOTOR
PILOT LAMP
15Ω COLD 40Ω HOT
120Ω
BK42B BALLAST RESISTOR
OSC. COIL L6, L7, L8
25L6GT 6SK7
25Z6GT 6SK7 6SA7 6SQ7
-B
+B
BIAS + CELL
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN "A" BAND (MAX. COUNTER-CLOCKWISE) POSITION.
CATHODE CURRENTS
(1) 6SK7 - - - - 11.5 MA.
(2) 6SA7 - - - - 5.5 MA.
(3) 6SK7 - - - 11.2 MA.
(4) 6SQ7 - - - - 0.4 MA.
(5) 25L6GT - - 56.0 MA.
(6) TOTAL RECT - 84.6 MA.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
P-84926-1
V175 (RC582)




*The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.*




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (R.C. 582)** |
| 14649 | Ballast—Ballast tube resistor |
| 36342 | Board—"Antenna-Ground" board |
| 37846 | Capacitor—Electrolytic—30 mfd., 150 volts |
| 37845 | Capacitor—Electrolytic comprising 1 section of 50 mfd., 250 volts, 1 section of 10 mfd., 250 volts, and 1 section of 30 mfd., 150 volts |
| 38357 | Capacitor—Mica trimmer—2-20 mmfd. |
| 38756 | Capacitor—Mica trimmer comprising 2 sections of 8-80 mmfd. each |
| 38758 | Capacitor—Mica trimmer—8-80 mmfd. for "C" band antenna coil |
| 38757 | Capacitor—Mica trimmer—100-350 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 34700 | Capacitor—120 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 38860 | Capacitor—394 mmfd. |
| 12537 | Capacitor—560 mmfd. |
| 38831 | Capacitor—630 mmfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 31581 | Cell—Bias cell |
| 38754 | Coil—Antenna coil—"C" band |
| 38829 | Coil—Coil and resistor assembly |
| 36031 | Coil—Loop primary coil |
| 38359 | Coil—Mounting cup for oscillator coil |
| 38755 | Coil—Oscillator coil |
| 35874 | Condenser—Variable tuning condenser |
| 38404 | Control—Volume control and power switch |
| 32634 | Cord—Drive cord (approx. 28-in. overall length) |
| 35788 | Core—Adjustable core and stud for oscillator core |
| 31580 | Holder—Bias cell holder |
| 35870 | Indicator—Station selector indicator |
| 37982 | Insulator—Insulator for phono socket |
| 38751 | Loop—Antenna loop complete |
| 38750 | Plate—Dial back plate complete with pulleys—less dial |
| 30868 | Plug—2-contact female plug for motor cable |
| 5119 | Plug—3-contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulley |
| 14649 | Resistor—Ballast tube resistor |
| 38859 | Resistor—15 ohms, 1 watt |
| 30785 | Resistor—150 ohms, 1 watt |
| 28740 | Resistor—1200 ohms, 2 watt |
| 34767 | Resistor—2200 ohms, ½ watt |
| 30730 | Resistor—2700 ohms, ½ watt |
| 22993 | Resistor—6800 ohms, 1 watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 30562 | Resistor—680,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 35862 | Shaft—Tuning knob shaft |
| 31365 | Socket—Dial lamp socket |
| 33742 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for oscillator coil core and stud |
| 38753 | Switch—Range switch |
| 38752 | Switch—Tone control switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 14649 | Tube—Ballast tube resistor |
| 33726 | Washer—"C" washer for tuning shaft |
| | **AUTOMATIC RECORD CHANGER ASSEMBLIES** |
| | See Parts List for RP 158 |
| | **SPEAKER ASSEMBLIES (RL70N2)** |
| 13867 | Cap—Dust cap |
| 36143 | Coil—Field coil—550 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| 38759 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38760 | Clamp—Dial clamp |
| 38862 | Decalcomania—Control panel decal |
| 36386 | Decalcomania—Trade mark decal (His Master's Voice) |
| 35467 | Decalcomania—Trade mark decal (RCA Victrola) |
| 38861 | Dial—Glass dial scale |
| 35937 | Escutcheon—Dial scale escutcheon—less dial |
| 30698 | Hinge—Cabinet lid hinge |
| 35814 | Knob—Control knob |
| 31480 | Lamp—Dial lamp |
| 39563 | Mounting—Motorboard spring mounting hardware |
| 33774 | Mounting—Speaker mounting hardware |
| 14270 | Spring—Retaining spring for knob |
| 38863 | Support—Cabinet lid support—R.H. |

# MODELS V-200 and V-201

## Chassis No. RC-519 and RC-522

## Seven-Tube, Two-Band, A-C, Radio-Phonograph Combinations

### Electrical Specifications

**FREQUENCY RANGES**

| | |
|---|---|
| Broadcast | 540-1,600 kc |
| Short Wave | 5.8-18 mc |

**INTERMEDIATE FREQUENCY** ..... 455 kc

**TUBE COMPLEMENT**

| | |
|---|---|
| (1) RCA-6SA7 | 1st Det., Oscillator |
| (2) RCA-6SK7 | I-F Amplifier |
| (3) RCA-6SQ7 | 2nd Det., A.V.C., and A-F Amplifier |
| (4) RCA-6SF5 | Phase Inverter |
| (5) RCA-6K6GT | Power Output |
| (6) RCA-6K6GT | Power Output |
| (7) RCA-5Y3-G | Rectifier |

**POWER OUTPUT RATING**

| | |
|---|---|
| Undistorted | 5 watts |
| Maximum | 5½ watts |

**LOUDSPEAKER**

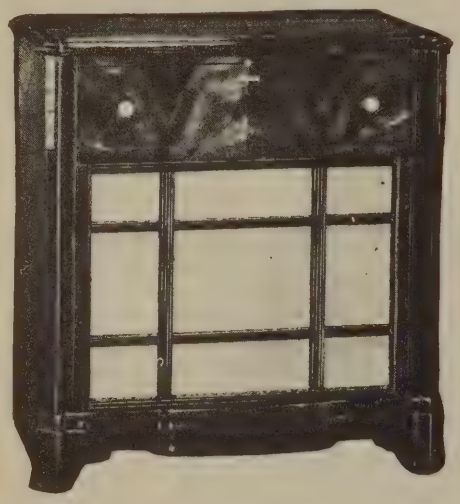
| | |
|---|---|
| Size | 12-inch |
| V. C. impedance at 400 cycles | 2.2 ohms |
| Identification Number | RL-70L6 |

**PHONOGRAPH**

| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch or Seven 12-inch |
| Turntable Speed | 78 r.p.m. |
| Type Pickup | Crystal |
| Pickup Impedance | 100,000 ohms at 1,000 cycles |
| Average Output | 1½ volts at 1,000 cycles across ½ meg. |

**POWER SUPPLY RATINGS**

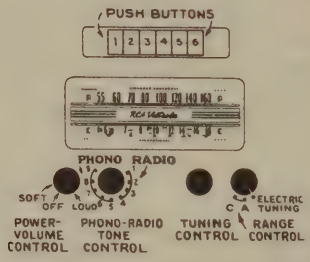
| | |
|---|---|
| 105-125 volts, 60 cycles | 110 watts |
| 105-125 volts, 50 cycles | 110 watts |
| 105-125 volts, 25 cycles | 110 watts |



H 34", W 31⅝", D 17"

*Model V-200* ←

*Model V-201* →



H 42", W 28¼", D 16⅝"

### Push Button Adjustments

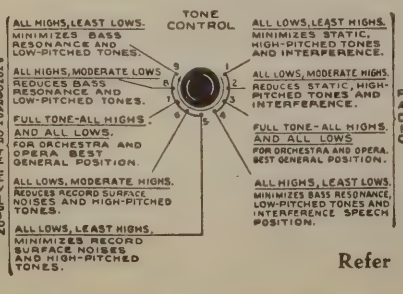
The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

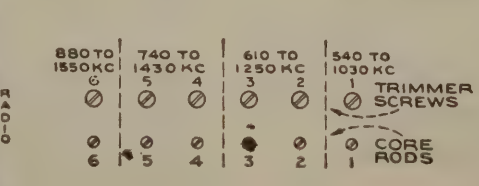
The procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast position and manually tune in the first station on the list.
3. Turn range switch to push-button position and press in the left-hand button.
4. Adjust L18 to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust L18 for peak output.
5. Adjust C12 for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining stations.

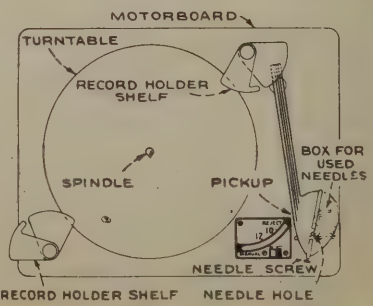
On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L13 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

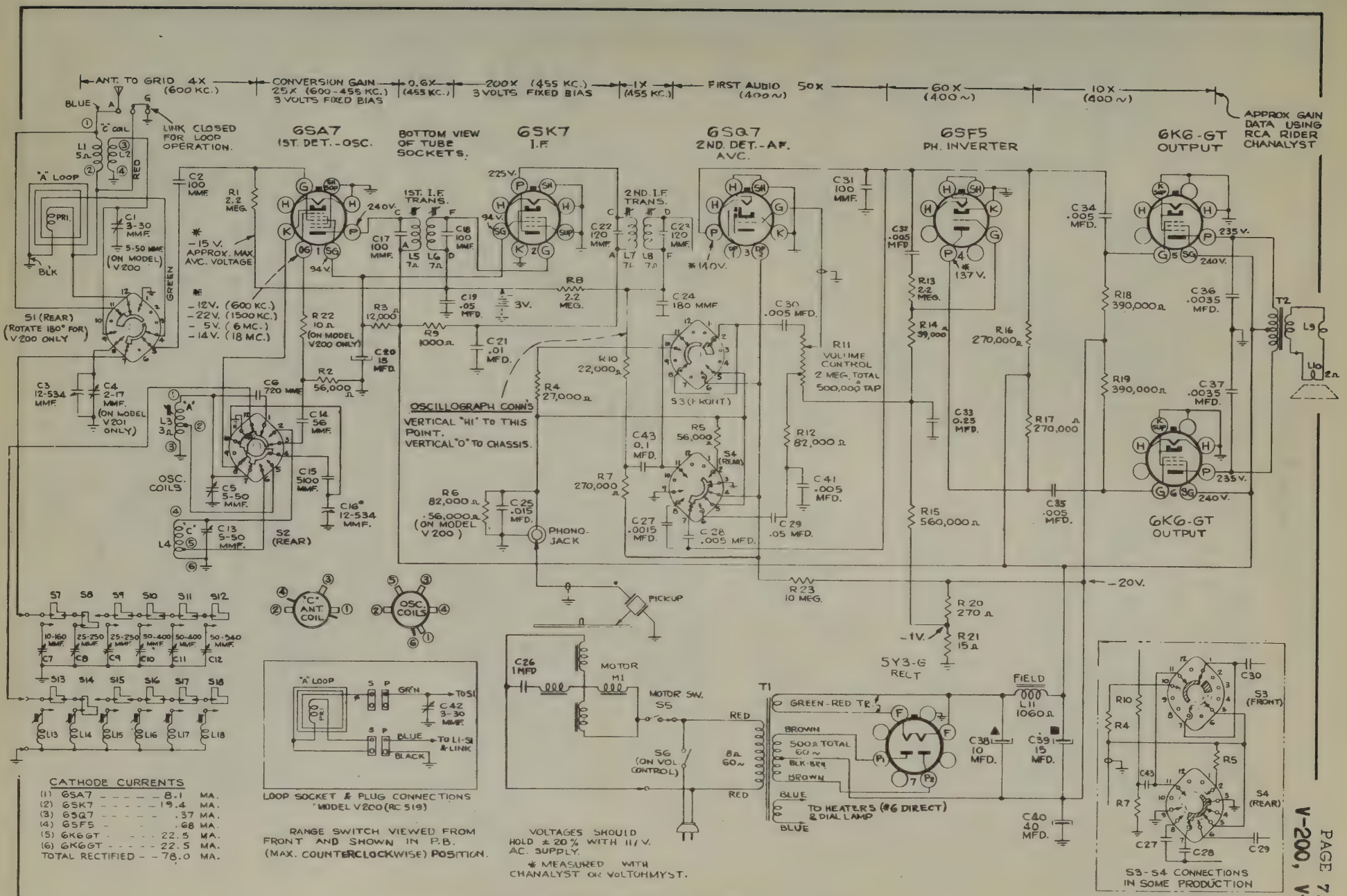
**NOTE:** Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.


TONE CONTROL
ALL HIGHS, LEAST LOWS. MINIMIZES BASS RESONANCE AND LOW-PITCHED TONES.
ALL HIGHS, MODERATE LOWS. REDUCES BASS RESONANCE AND LOW-PITCHED TONES.
FULL TONE-ALL HIGHS AND ALL LOWS. FOR ORCHESTRA AND OPERA. BEST GENERAL POSITION.
ALL LOWS, MODERATE HIGHS. REDUCES RECORD SURFACE NOISES AND HIGH-PITCHED TONES.
ALL LOWS, LEAST HIGHS. MINIMIZES RECORD SURFACE NOISES AND HIGH-PITCHED TONES.
ALL LOWS, LEAST HIGHS. MINIMIZES STATIC, HIGH-PITCHED TONES AND INTERFERENCE.
ALL LOWS, MODERATE HIGHS. REDUCES STATIC, HIGH-PITCHED TONES AND INTERFERENCE.
FULL TONE-ALL HIGHS AND ALL LOWS. FOR ORCHESTRA AND OPERA. BEST GENERAL POSITION.
ALL HIGHS, LEAST LOWS. MINIMIZES BASS RESONANCE, LOW-PITCHED TONES AND INTERFERENCE. SPEECH POSITION.
RADIO
PHONOGRAPH OR TELEVISION




Refer to RP-152A Service Data for information on Record Changer Mechanism






R-F and I-F gain measurements are made using a 3-volt battery connected from the A.V.C. bus to chassis, as shown in dotted lines.

T-93322-3
V201 (RC 522)

# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or Volt Ohmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scales printed in this service note can be used as an accurate and convenient substitute for the regular dial.

Each method is described below.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate. (1/16-inch to left of this mark in V-201.)

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

**Using Calibration Scale, Model V-200.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale.

**Using Calibration Scale, Model V-201.—**

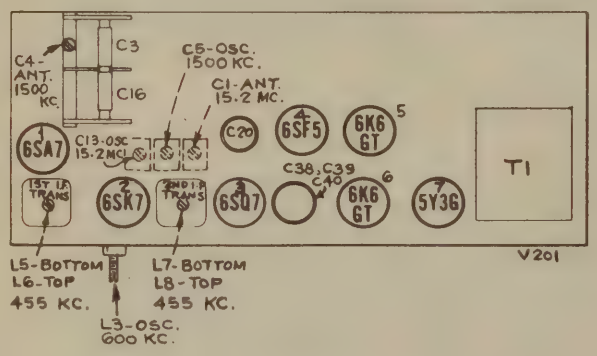
A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh. Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.

**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

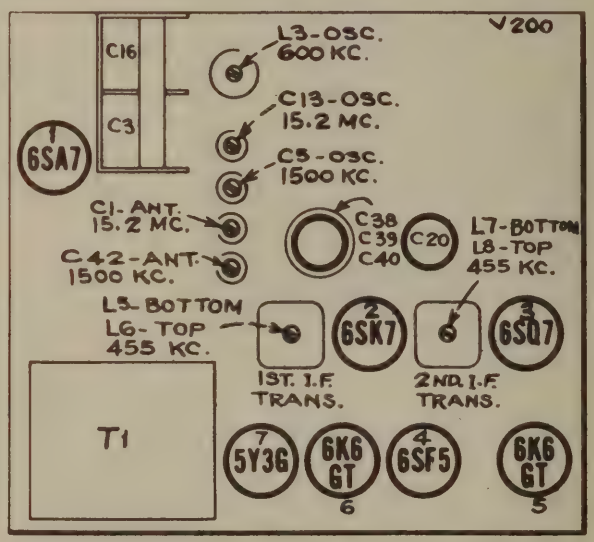
| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | "C" band, Quiet Point at HF end of dial | L7 and L8 (2nd I.F. Trans.) |
| 2 | 1st det. grid, in series with .01 mfd. | | | L5 and L6 (1st I.F. Trans.) |
| 3 | Antenna terminal, in series with 200 mmfd. (link open) | 1,500 kc | 1,500 kc "A" band 160° | C5 (osc.) C4 (ant. V-201) C42 (ant. V-200) |
| 4 | | 600 kc | 600 kc "A" band 30.5° | L3 (osc.) Rock in |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna terminal, in series with 47 mmfd. (link open) | 15.2 mc | 15.2 mc "C" band 148° | C13 (osc.)* C1 (ant.) Rock in C1 |

* Use minimum capacity peak if two peaks can be obtained. Check to determine that the correct peak has been used, by tuning receiver to 14.29 mc, where a weaker signal should be received.

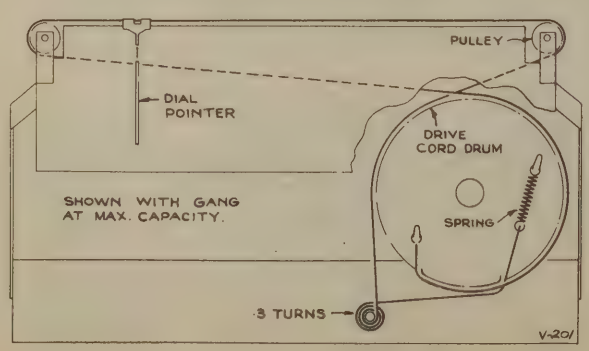
**Note:** Oscillator tracks above signal on both bands.



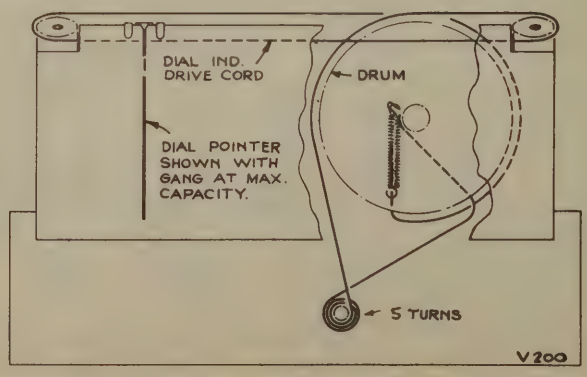

*Model V-201*



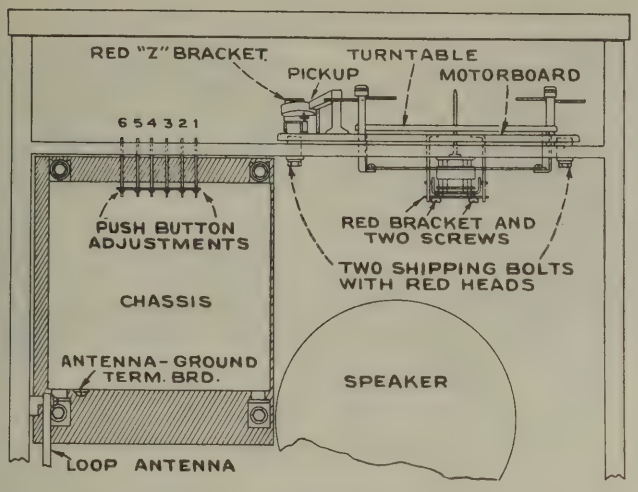

*Model V-200*



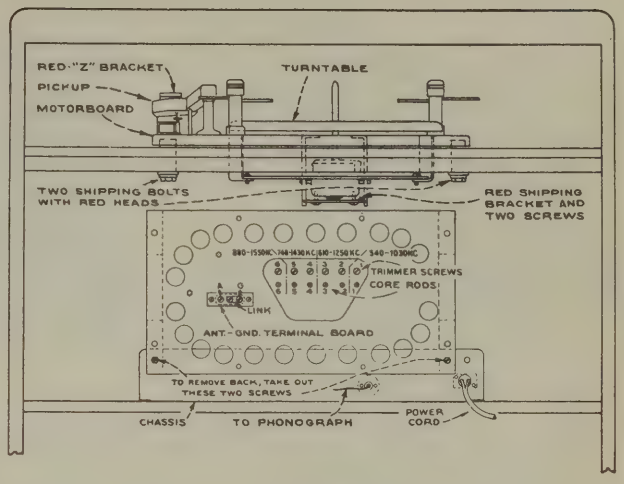

*Model V-201*




*Model V-200*




*Model V-200*

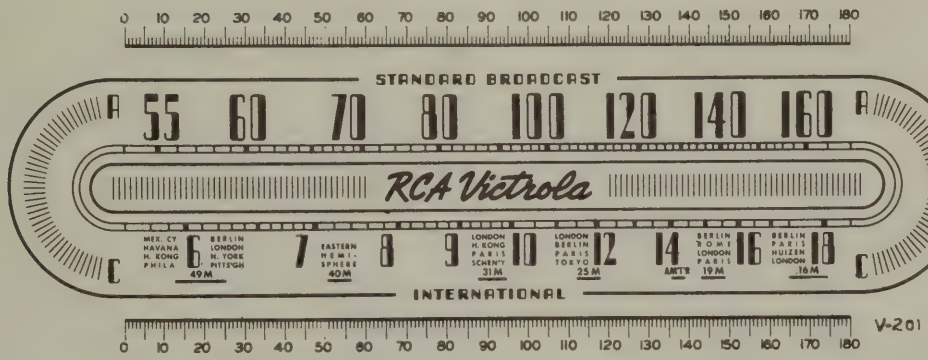



*Model V-201*

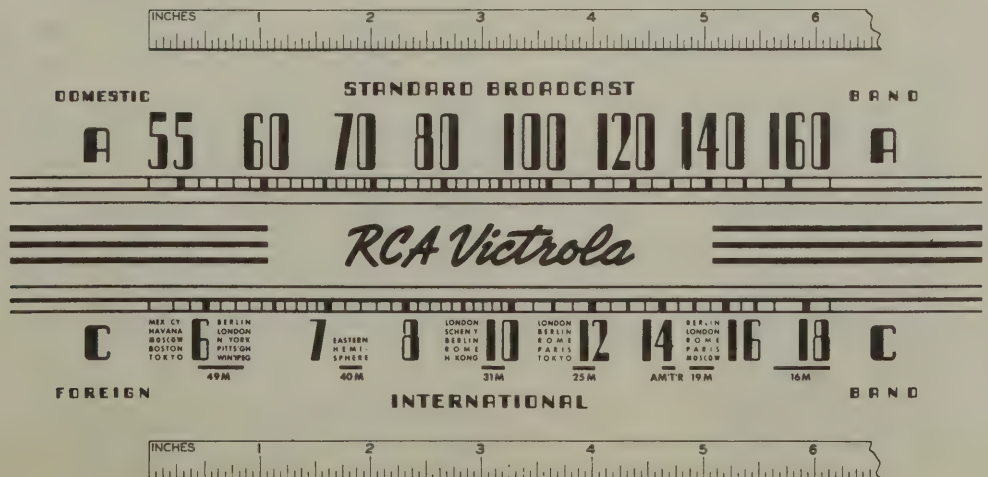
**Rumble:**

Rumble is related to motor vibration, combined with high-gain amplifier, and prominent bass response.

The vibration of the motor in these instruments is as low as it can be made: Do not replace it to correct rumble. Rather, reduce the low-frequency response by shunting a 50,000-ohm ½-watt resistor across the crystal pickup terminals.


0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180
STANDARD BROADCAST
A 55 60 70 80 100 120 140 160 A
RCA Victrola
C
MEX. CY HAVANA H. KONG PHILA
6 BERLIN LONDON N. YORK PITTSGH
49M
7 EASTERN HEMI-SPHERE
40M
8
9 LONDON H. KONG PARIS SCHEN'Y
31M
10 LONDON BERLIN PARIS TOKYO
25M
12
14 AM'TR
16 BERLIN ROME LONDON PARIS
19M
18 BERLIN PARIS HUIZEN LONDON
16M
C
INTERNATIONAL
V-201
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

*Model V-201 Calibration Scale*




*Model V-209 Calibration Scale*

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

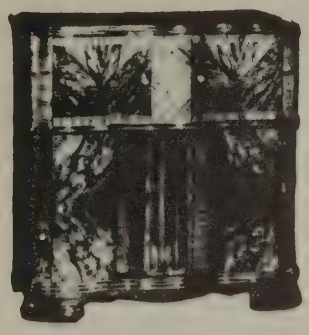
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES**<br>Model V-200 (RC-519)<br>Model V-201 (RC-522) |
| 36342 | Board—"Antenna-Ground" board—Model V-200 |
| 34025 | Board—"Antenna-Ground" board—Model V-201 |
| 35795 | Calibrator—Drive drum calibrator scale—Model V-201 |
| 36533 | Capacitor—Mica trimmer comprising 1 section of 3-30 mmfd., and 2 sections of 5-50 mmfd.—Model V-201 |
| 36336 | Capacitor—Mica trimmer comprising 3 sections of 5-50 mmfd., and 1 section of 3-30 mmfd.—Model V-200 |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd.—Model V-201 |
| 12723 | Capacitor—56 mmfd. |
| 34699 | Capacitor—100 mmfd., mica |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 35877 | Capacitor—720 mmfd. |
| 36679 | Capacitor—5,100 mmfd. |
| 33806 | Capacitor—.0015 mfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 36589 | Capacitor—Electrolytic—1 section of 15 mfd., 400 volts |
| 36569 | Capacitor—Electrolytic—1 section of 15 mfd., 400 volts, 1 section of 10 mfd., 400 volts, and 1 section of 40 mfd., 25 volts |
| 35965 | Coil—Antenna coil—"C" band |
| 36031 | Coil—Loop primary—Model V-201 |
| 36557 | Coil—Oscillator coil—Model V-200 |
| 35854 | Coil—Oscillator coil—Model V-201 |
| 37133 | Coil—P.B. oscillator coil, 540-1,030 kc |
| 35803 | Coil—P.B. oscillator coil—Model V-201 |
| 36420 | Condenser—Variable tuning condenser—Model V-200 |
| 36532 | Condenser—Variable tuning condenser—Model V-201 |
| 36534 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord—Model V-201 |
| 32634 | Cord—Pointer cord (approx. 45-in. overall length)—Model V-200 |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils—Model V-201 |
| 36332 | Drum—Drive drum—Model V-200 |
| 36537 | Drum—Drive drum — less calibrator — Model V-201 |
| 35799 | Frame—Dial frame complete with drive cord pulleys—less dial—Model V-201 |
| 35870 | Indicator—Station selector indicator — Model V-200 |
| 35798 | Indicator—Station selector indicator — Model V-201 |
| 36536 | Loop—Antenna loop complete—Model V-201 |
| 36333 | Plate—Dial back plate complete with drive cord pulleys—less dial—Model V-200 |
| 30868 | Plug—2-contact female plug for motor cable |
| 36009 | Plug—2-prong male plug for loop cable—Model V-200 |
| 32641 | Plug—3-prong male plug for selector cable—Model V-200 |
| 5040 | Plug—4-contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulley |
| 13988 | Resistor—10 ohms, ½ watt—Model V-200 |
| 11565 | Resistor—15 ohms, ½ watt |
| 36692 | Resistor—270 ohms, 3 watts |
| 30152 | Resistor—1,000 ohms, 1 watt |
| 35875 | Resistor—12,000 ohms, 3 watts |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 13601 | Resistor—10 meg., ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drum |
| 36340 | Shaft—Tuning shaft—Model V-200 |
| 35797 | Shaft—Tuning shaft—Model V-201 |
| 35772 | Shield—Bottom shield for transformer, Stock No. 35959 |
| 35709 | Shield—Power transformer top shield—Model V-200 |
| 36656 | Shield—Top shield for transformer, Stock No. 35959—Model V-201 |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for core and stud—Model V-200 |
| 36467 | Switch—High-low-phono-radio switch |
| 36025 | Switch—Push button selector switch—Model V-201 |
| 36468 | Switch—Range switch—Model V-200 |
| 36535 | Switch—Range switch—Model V-201 |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer—110 volts, 25 cycles |
| 35959 | Transformer—Power transformer, 105-120 volts, 50-60 cycles—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON RP-152A. |
| | **SPEAKER ASSEMBLIES**<br>(RL-70L-6) |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil—1,060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 36671 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36027 | Bezel—Push button bezel—less buttons |
| 36461 | Button—Plug button |
| 36299 | Button—Push button—Model V-200 |
| 36300 | Button—Push button—Model V-201 |
| 13103 | Cap—Pilot lamp cap—Model V-200 |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd.—Model V-200 |
| 36462 | Clamp—Dial clamp—Model V-200 |
| 36002 | Coil—Loop primary—Model V-200 |
| 37133 | Coil—P.B. oscillator coil—540-1,030 kc—Model V-200 |
| 35803 | Coil—P.B. oscillator—Model V-200 |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils—Model V-200 |
| 36328 | Cover—Compartment lamp leads cover |
| 36713 | Decalcomania—Control panel decal—Model V-200 |
| 36507 | Decalcomania—Control panel decal—Model V-201 |
| 36386 | Decalcomania—Trade mark decal (His Master's Voice) |
| 35467 | Decalcomania—Trade mark decal (RCA Victrola)—Model V-200 |
| 36712 | Dial—Glass dial scale—Model V-200 |
| 36596 | Dial—Glass dial scale—Model V-201 |
| 36327 | Escutcheon—Dial scale escutcheon—less dial—Model V-200 |
| 36026 | Escutcheon—Dial scale escutcheon—less dial—Model V-201 |
| 30698 | Hinge—Cabinet lid hinge |
| 36246 | Holder—Needle book holder |
| 36694 | Knob—Cabinet drawer knob—Model V-200 |
| 36297 | Knob—Tone or range switch knob |
| 36298 | Knob—Tuning or volume control knob |
| 5117 | Lamp—Compartment lamp |
| 11765 | Lamp—Dial lamp |
| 36590 | Loop—Antenna loop—Model V-200 |
| 36149 | Marker—Station marker |
| 31470 | Mounting—Complete spring mounting hardware for 1 motorboard |
| 30870 | Plug—2-prong male plug for motorleads—Model V-200 |
| 35740 | Shade—Compartment lamp shade |
| 36422 | Socket—3-contact female for selector switch assembly—Model V-200 |
| 35999 | Socket—Antenna loop cable socket—Model V-200 |
| 14270 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push button |
| 35575 | Spring—Lid support spring—Model V-200 |
| 36693 | Support—Cabinet lid support—Model V-200 |
| 32875 | Switch—Motor switch—Model V-200 |
| 36423 | Switch—P.B. selector switch—Models V-200 |
| 36941 | Support—Cabinet lid support—Model V-201 |

# MODELS VHR-202, VHR-207, VHR-407

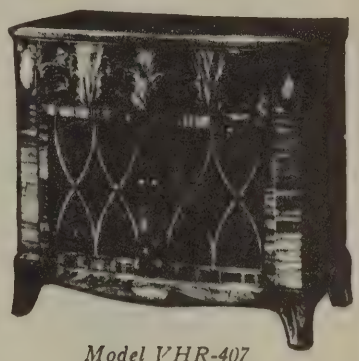
**Chassis No. RC-548 RC-547 RC-547A**

## Home-Recording Radio-Phonograph Combinations

*Model VHR-202*



*Model VHR-207*



*Model VHR-407*

## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Broadcast, "A" Band | 540-1,600 kc |
| Short Wave, "B" Band (VHR-207, 407) | 1,550-4,000 kc |
| Short Wave, "C" Band | 5,800-18,000 kc |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

| | VHR-202 | VHR-207, 407 |
|---|---|---|
| R-F Amplifier | RCA-6SK7 | |
| 1st-Det., Oscillator | RCA-6SA7 | RCA-6SA7 |
| I-F Amplifier | RCA-6SK7 | RCA-6SK7 |
| 2nd-Det., A.V.C., Phase Inverter | RCA-6Q7 | RCA-6Q7 |
| 1st—A-F Amplifier | RCA-6SJ7 | RCA-6SJ7 |
| Power Output | RCA-6K6GT (2) | RCA-6F6G (2) |
| Microphone Pre-Amplifier | RCA-6Q7 | RCA-12K7GT |
| "Contractor" Rectifier | RCA-6H6 | |
| "Magic Eye" Indicator | RCA-6U5 | RCA-6U5 |
| Rectifier | RCA-5Y3G | RCA-5U4G |

PHONOGRAPH (RP-155)

| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch or Seven 12-inch |
| Turntable Speed | 78 r.p.m. |
| Drive | Motor drive through idler on inside rim of turntable |
| Type Pickup | Crystal |
| Pickup Impedance | 100,000 ohms at 1,000 cycles |
| Average Output | 1½ volts at 1,000 cycles across ½ meg. |

RECORDER

| | |
|---|---|
| Recording Head (cutter) | Crystal |
| Impedance of Cutter at 1,000 cycles | Approx. 60,000 |
| Turntable Speed | 78 r.p.m. |
| Grooves Cut per Inch | Approx. 115 |
| Inches Cut per Minute | Approx. .713 inch |
| Recording Blank Discs | Coated metal-base or coated paper-base |
| Recording Disc Diameter | Up to 10 inches |
| Drive | Motor drive through idler on inside rim of turntable; the turntable spindle drives a lead screw which guides the recorder arm from outside of recording blank to inside |

POWER OUTPUT

| | VHR-202 | VHR-207, 407 |
|---|---|---|
| Undistorted watts | 5 | 10 |
| Maximum watts | 5.5 | 12 |

LOUDSPEAKER

| | VHR-202 | VHR-207, 407 |
|---|---|---|
| (Electrodynamic) | RL-70M-6 | RL-70M-5 |
| Diameter | 12-inch | 12-inch |
| Voice-coil impedance at 400 cycles | 2.2 ohms | 2.2 ohms |

POWER SUPPLY RATING

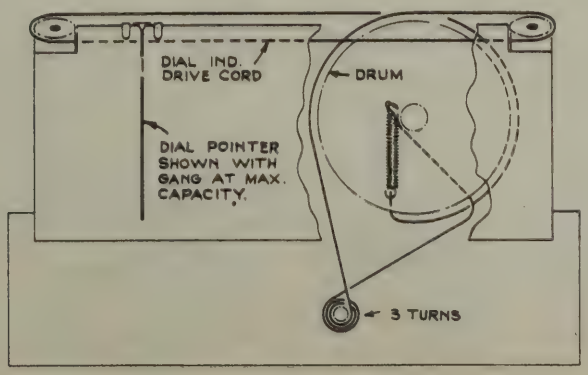
| | | |
|---|---|---|
| 105-125 volts, 60 cycles | 140 watts | 200 watts |

CABINET DIMENSIONS

| | VHR-202 | VHR-207 | VHR-407 |
|---|---|---|---|
| Height (inches) | 34 | 36 | 34 |
| Width (inches) | 32 | 35 | 34¾ |
| Depth (inches) | 17 | 17⅛ | 19 |

TUNING DRIVE RATIO ..... 15 to 1

**REFER TO INDEX FOR DATA ON AUTOMATIC RECORD CHANGER**




*Dial Drive Cord Arrangement*

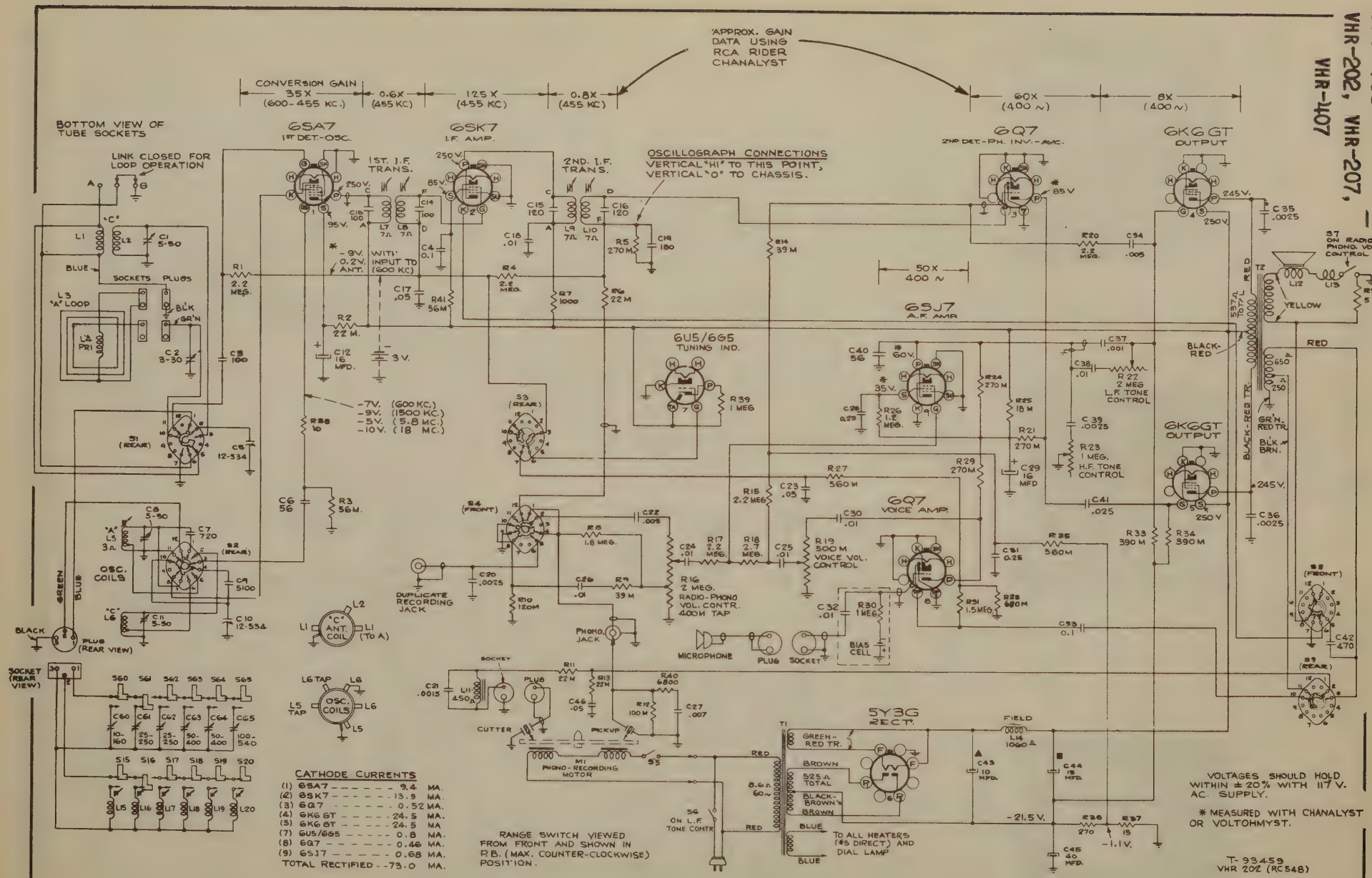
*Three Mounting Arrangements of Follower-Arm Weight on Home Recording Models*

### VHR-207, 407

**12K7-GT Burnouts:**

When shooting trouble or when testing Models VHR 207, and VHR 407 do not under any circumstances short the +B to ground with screwdriver or any other tool as a test for plate voltage.

A +B short will burn out the filament of the 12K7-GT microphone pre-amplifier tube. Always test for +B voltage on the chasses with a voltmeter and not with a screwdriver.




CATHODE CURRENTS

| | | |
|---|---|---|
| (1) | 6SA7 | 9.4 MA. |
| (2) | 6SK7 | 13.9 MA. |
| (3) | 6Q7 | 0.52 MA. |
| (4) | 6K6 GT | 24.5 MA. |
| (5) | 6K6 GT | 24.5 MA |
| (7) | 6U5/6G5 | 0.8 MA. |
| (8) | 6Q7 | 0.46 MA. |
| (9) | 6SJ7 | 0.68 MA. |
| TOTAL RECTIFIED | | 73.0 MA. |

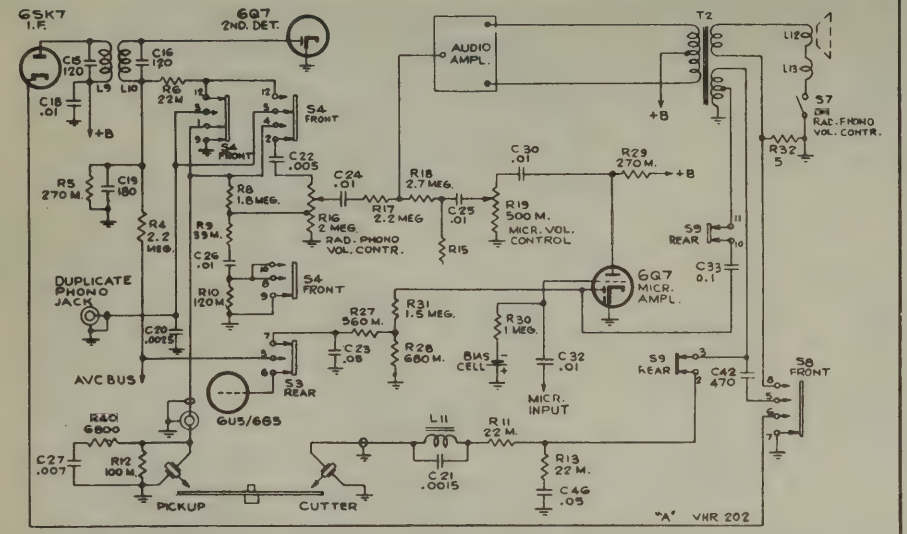
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN R.B. (MAX. COUNTER-CLOCKWISE) POSITION.

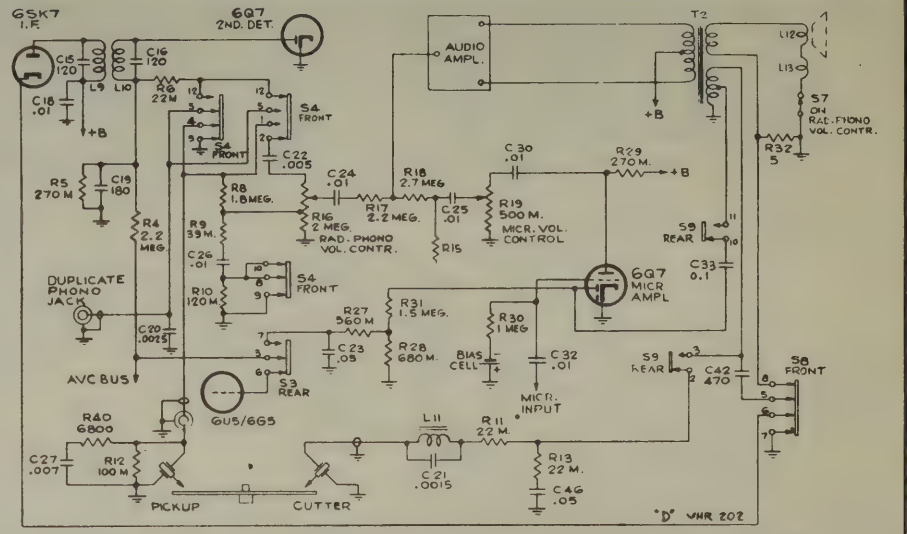
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

T-93459
VHR 202 (RC548)

## Model VHR-202




1—"Recording"

2—"Victrola"

# Model VHR-202 Service Selector Circuits

**RECORDING:**
1. CUTTING RECORDS OF VOICE OR MUSIC THROUGH MICROPHONE.
2. CUTTING RECORDS OF PHONOGRAPH SELECTIONS USING AUXILIARY TURNTABLE.
3. CUTTING RECORDS OF PHONOGRAPH SELECTIONS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.

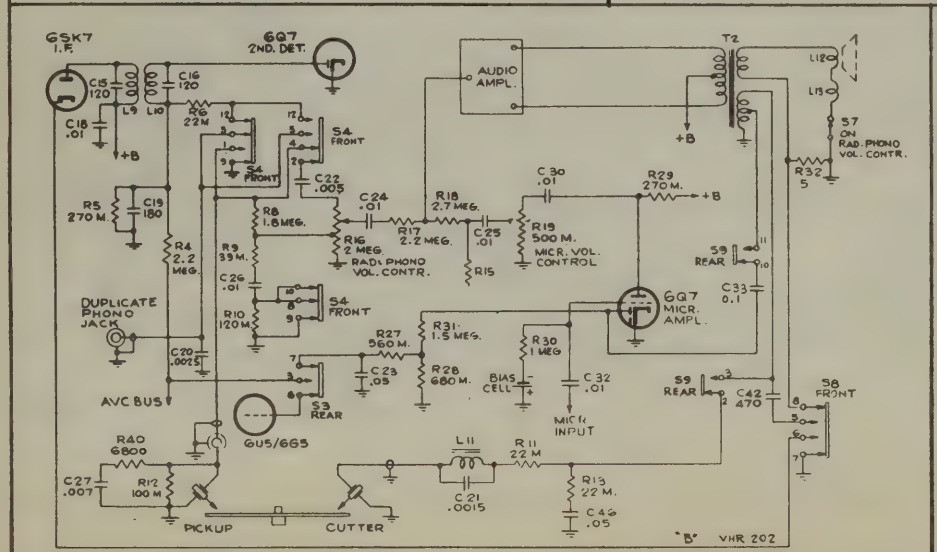
**RADIO:**
1. RADIO PROGRAMS.
2. RADIO PROGRAMS MIXED WITH VOICE OR MUSIC BY MICROPHONE.

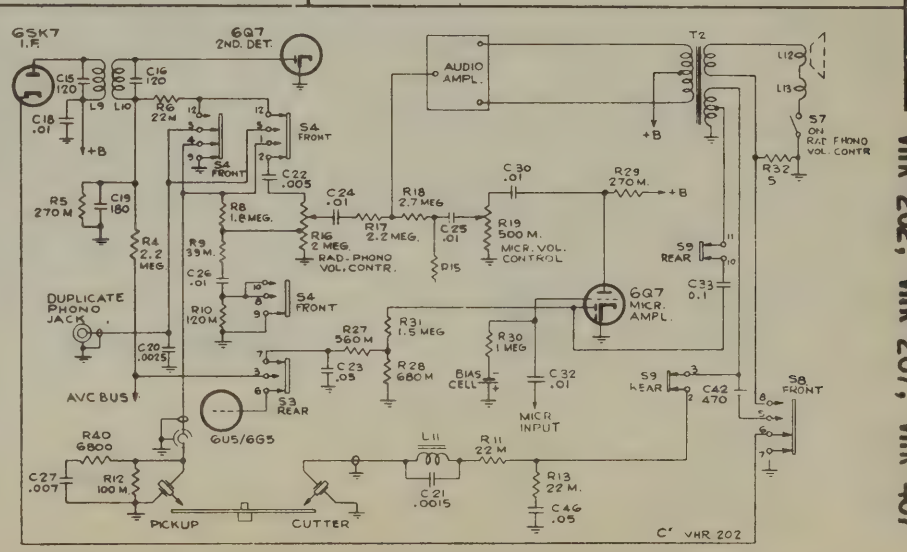
**VICTROLA:**
1. PHONOGRAPH RECORD SELECTIONS.
2. PHONOGRAPH SELECTIONS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
3. MICROPHONE ONLY (RA).

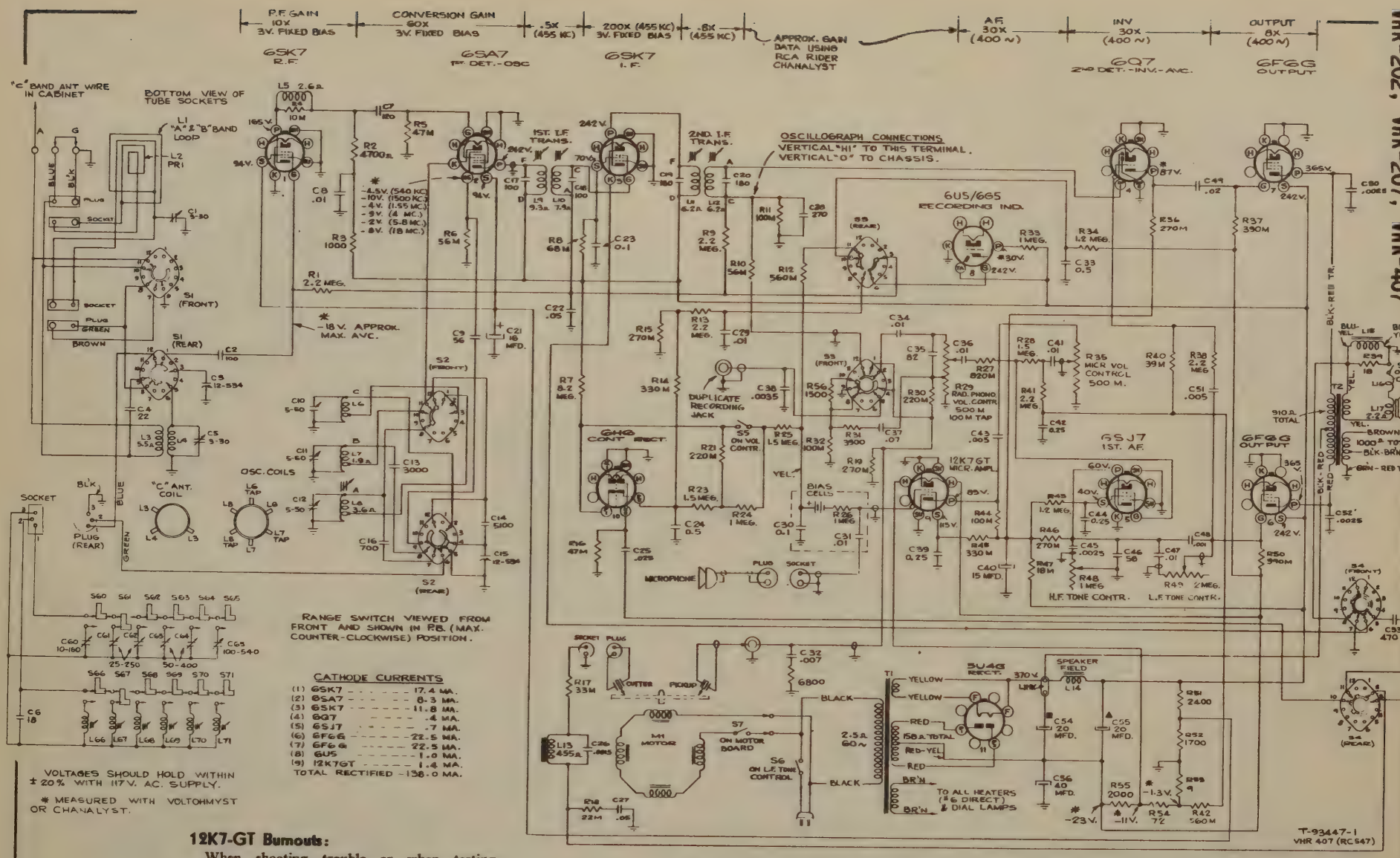
**RADIO RECORDING:**
1. CUTTING RECORDS OF RADIO PROGRAMS.
2. CUTTING RECORDS OF RADIO PROGRAMS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.

4—"Radio"

3—"Radio Recording"






RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN P.B. (MAX. COUNTER-CLOCKWISE) POSITION.

CATHODE CURRENTS

| | | |
|---|---|---|
| (1) | 6SK7 | 17.4 MA. |
| (2) | 6SA7 | 8.3 MA. |
| (3) | 6SK7 | 11.8 MA. |
| (4) | 6Q7 | .4 MA. |
| (5) | 6SJ7 | .7 MA. |
| (6) | 6F6G | 22.5 MA. |
| (7) | 6F6G | 22.5 MA. |
| (8) | 6U5 | 1.0 MA. |
| (9) | 12K7GT | 1.4 MA. |
| | TOTAL RECTIFIED | 138.0 MA. |

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH VOLTOHMYST OR CHANALYST.

## 12K7-GT Burnouts:

When shooting trouble or when testing Models VHR 207, and VHR 407 do not under any circumstances short the +B to ground with screwdriver or any other tool as a test for plate voltage.

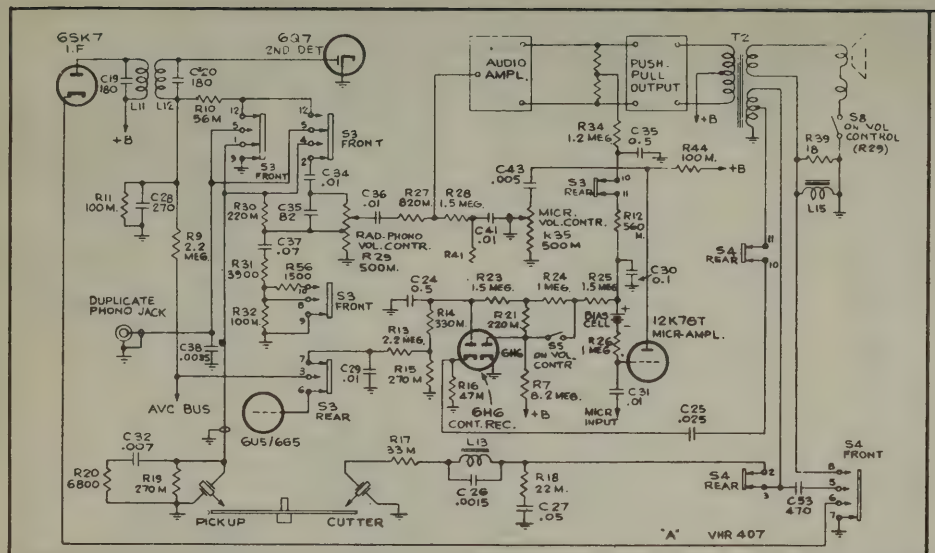
A +B short will burn out the filament of the 12K7-GT microphone pre-amplifier tube. Always test for +B voltage on the chasses with a voltmeter and not with a screwdriver.

## Changing 470 mmfd. Capacitor C-53:

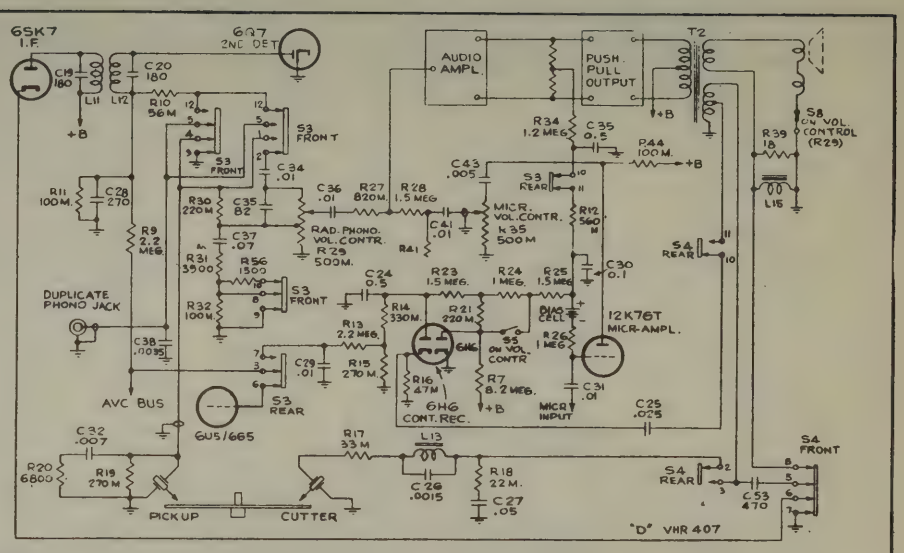
Some cases have been reported of break down of capacitor C-53 in the cutter circuit. A higher voltage rating capacitor is now available under the same Stock Number, 30433. The former type capacitor (black color) should be replaced with the new type (grey color) whenever these sets are serviced.

## Radio Break-Through on Phono:

Radio break through may occur in these models, due to capacity coupling between the I.F. 6SK7 plate lead and 6F6G grid leads. When this condition exists, dress the 6F6G grid leads down against the chassis well away from the 6SK7 I.F. plate lead.



"A" VHR 407



"D" VHR 407

1—"Re-Recording"

Models VHR-207, VHR-407
Service Selector
Circuits

2—"Victrola"

## SERVICE SELECTOR

**RE-RECORDING:**
1. CUTTING RECORDS OF VOICE OR MUSIC THROUGH MICROPHONE.
2. CUTTING RECORDS OF PHONOGRAPH SELECTIONS USING AUXILIARY TURNTABLE.
3. CUTTING RECORDS OF PHONOGRAPH SELECTIONS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.

**RADIO:**
1. RADIO PROGRAMS.
2. RADIO PROGRAMS MIXED WITH VOICE OR MUSIC BY MICROPHONE.

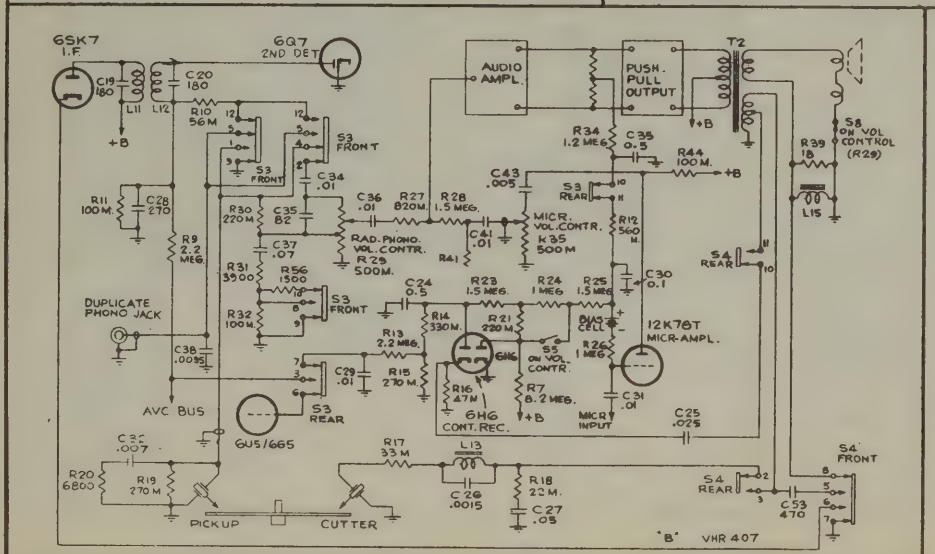
**VICTROLA:**
1. PHONOGRAPH RECORD SELECTIONS.
2. PHONOGRAPH SELECTIONS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
3. MICROPHONE ONLY (RA).

**RECORDING:**
1. CUTTING RECORDS OF RADIO PROGRAMS.
2. CUTTING RECORDS OF RADIO PROGRAMS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.

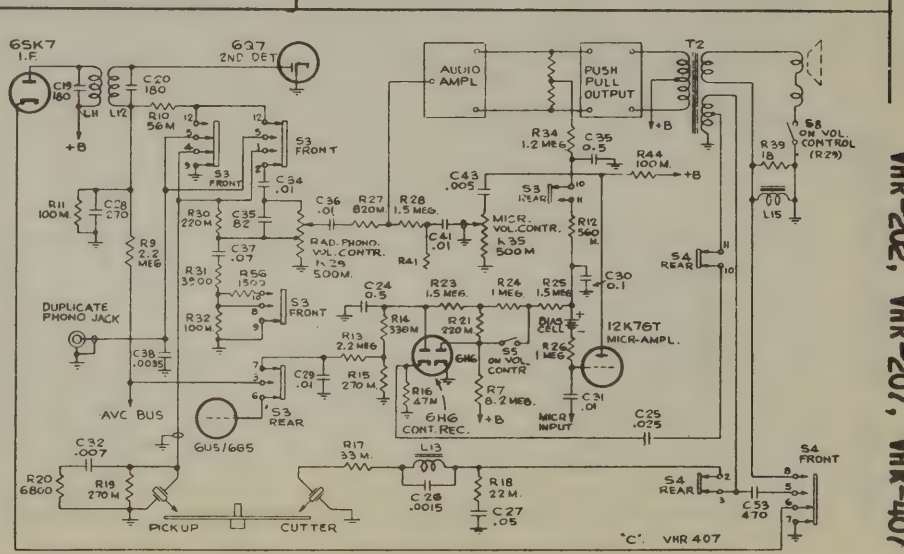
4—"Radio"

In some production, the wording on the Service Selector plate is like that shown for Model VHR-202.

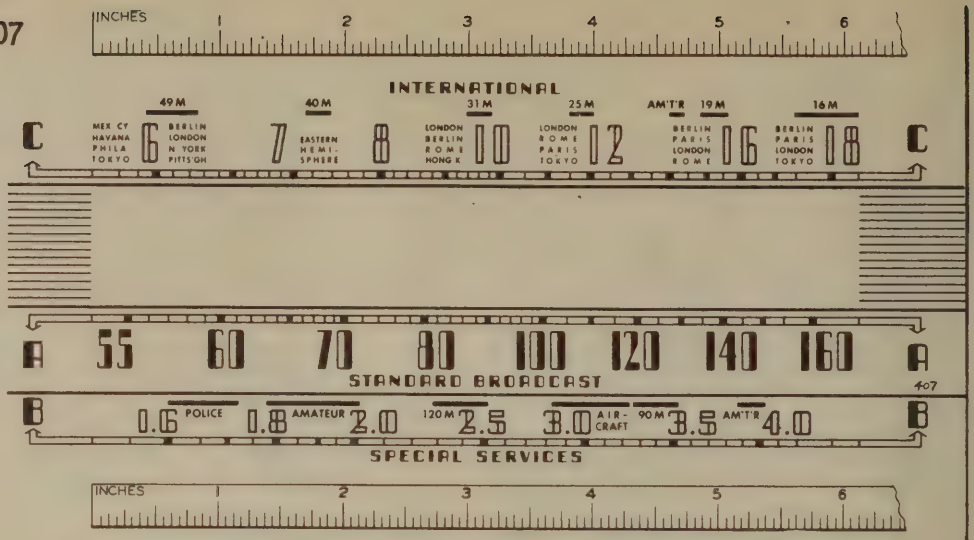
3—"Recording"



"B" VHR 407



"C" VHR 407




## Alignment Procedure

*At Right—Calibration Scale for VHR-207 and VHR-407. This also applies to Model VHR-202, except "B" Band is omitted.*

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

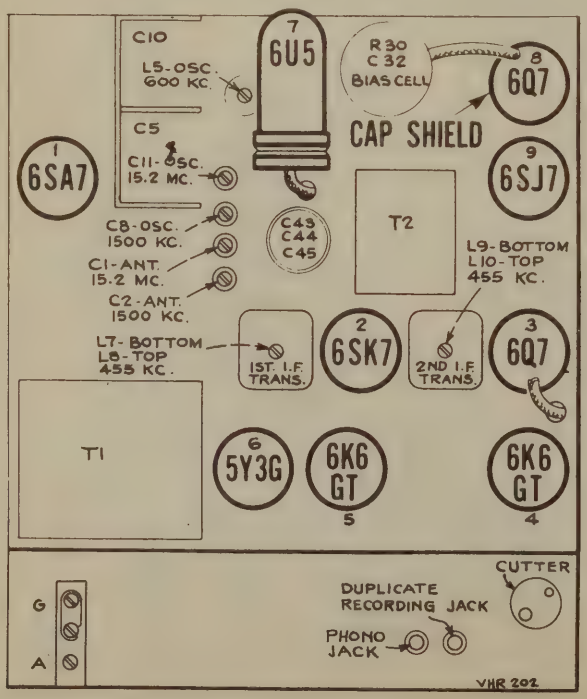
**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

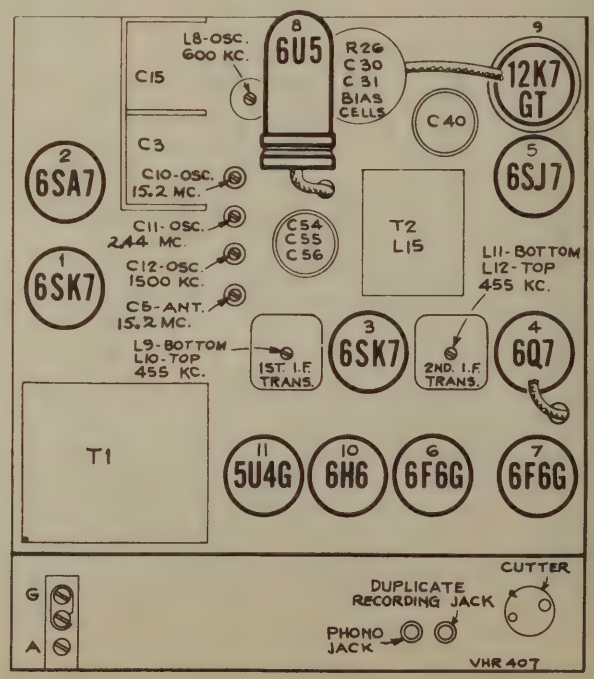
2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale.

**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.




*Model VHR-202*




*Models VHR-207, 407*

## Model VHR-202

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I-F grid, in series with .01 mfd. | 455 kc | Quiet Point at High-Freq. end of "C" Band | L9 and L10 (2nd I.F. Trans.) |
| 2 | 1st-detector grid, in series with .01 mfd. | | | L7 and L8 (1st I.F. Trans.) |
| 3 | 1st-detector grid, in series with .01 mfd. | 600 kc | 600 kc "A" Band | L5 (osc.) |
| 4 | | 1,500 kc | 1,500 kc "A" Band | C8 (osc.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | Antenna Terminal, in series with 47 mmfd. | 15.2 mc | 15.2 mc "C" Band | C11 (osc.)* C1 (ant.)** |
| 7 | Install and connect chassis in cabinet. Close link on antenna terminal board. Tune in a radiated signal at 1,500 kc and peak "A" band loop trimmer C2. Rock in L5 at 600 kc. Repeat these adjustments. | | | |

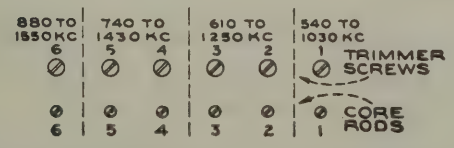
* Use **minimum** capacity peak if two peaks can be obtained.
** Rock in C1 and use **maximum** capacity peak if two peaks can be obtained.

## Models VHR-207, VHR-407

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | I.F. Grid in series with .01 mfd. | 455 kc | "C" Band Quiet Point at High Freq. end | L11 and L12 (2nd I.F. Trans.) |
| 2 | 1st Det. Grid in series with .01 mfd. | | | L9 and L10 (1st I.F. Trans.) |
| 3 | R.F. Grid in series with .01 mfd. | 600 kc | "A" Band 600 kc | L8 (osc.) |
| 4 | | 1,500 kc | "A" Band 1,500 kc | C12 (osc.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | R.F. Grid in series with .01 mfd. | 2.44 mc | "B" Band 2.44 mc | C11 (osc.) |
| 7 | Antenna Terminal in series with 47 mmfd. | 15.2 mc | "C" Band 15.2 mc | C10 (osc.)* C5 (ant.)** |
| 8 | Install and connect chassis in cabinet. Close link on antenna terminal board. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band trimmer C1 (on loop). Rock in L8 at 600 kc. Repeat these adjustments. | | | |

* Use **minimum** capacity peak if two peaks can be obtained.
** Rock in C5 and use **maximum** capacity peak if two peaks can be obtained.

## Push Button Adjustments




The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.

2. Turn the range switch to the broadcast position and manually tune in the first station on the list.

3. Turn range switch to push-button position and press in the left-hand button.

4. Adjust core rod No. 1 to receive the first station. To secure the best adjustment, rotate the loop for least pickup, and adjust core rod No. 1 for peak output.

5. Adjust trimmer screw No. 1 for peak output on the first station.

6. Proceed in the same manner to adjust for the remaining stations.

7. Repeat adjustments for best results.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with core rod No. 6 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

**NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**

# VHR-202, VHR-207, VHR-407 Recorder Operating Instructions

## Preliminary.—

1. See that cutter is functioning correctly.

2. Place recording disc on turntable with stud engaged in one hole.

3. Turn on power-bass control, just past the click of the power switch. Turn treble tone control full clockwise. Set radio-phono volume control to soft, and microphone volume control fully counter-clockwise.

## Radio Recording.—

1. Tune in the desired radio program.

2. Turn service selector to position "3."

3. Turn radio-phono volume control so the "Magic Eye" just closes during loudest passages.

4. Push turntable switch "on."

5. Lift the recording arm, move it over so the stylus is about ¼-inch inside the recording disc, and lower gently on the disc.

6. During the recording, listen to the loudspeaker, watch the "Magic Eye," and increase or decrease the radio-phono volume control if the broadcast level becomes too low or too high.

7. Use a fine hair brush occasionally to keep the area immediately ahead of the stylus free from chips and threads.

8. Before the cutter reaches its inner limit, lift the cutter head and place on rest. Turn off the turntable switch and remove the cuttings from the disc.

9. The recording may be **"played-back"** immediately: Turn the service selector to "Victrola," push the turntable switch "on," **turn power-bass control fully clockwise,** place pickup needle in outer groove of the disc, and adjust the radio-phono volume control. **Use a new needle for play-back.**

## Microphone Recording.—

1. Turn service selector to position "1."

2. Turn radio-phono volume control to its "off" position to prevent feed-back and "howl."

3. Turn power-bass control just past the click of the power switch. Turn treble-tone control full clockwise.

4. To obtain an approximate setting of the microphone volume control before making a recording, talk into the microphone (which should be left plugged into its receptacle at all times) and adjust the microphone volume control so the "Magic Eye" just closes. By talking in a fairly level tone, and by maintaining the same distance between the microphone and lips, the microphone volume control will not require continual readjustment.

5. Start the turntable and place cutter on the disc.

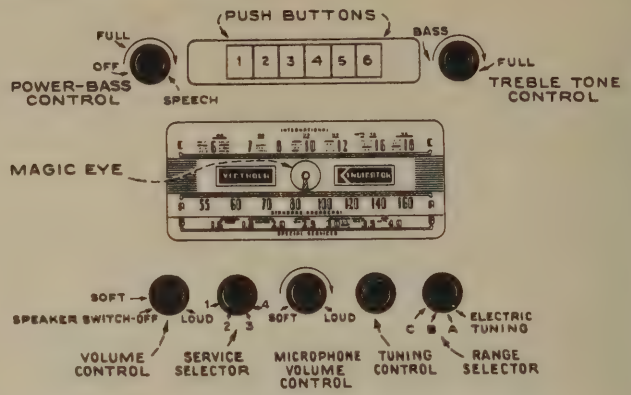
6. Talk into the microphone to make the desired recording, and re-adjust the microphone volume control if required, as indicated by the "Magic Eye."

7. Stop the recorder before it reaches its inner limit, turn the microphone volume control counter-clockwise and play back the recording as described in "9" above.

## Re-Recording.—

A record may be re-recorded, or duplicated (that is, a "copy" may be made from an "original") by connecting an RCA Victrola Attachment (record player) to the "re-recording jack" on the rear of the radio chassis. The "original" record is played on the RCA Victrola Attachment, and the "copy" is cut or recorded on the Home Recorder.

SERVICE SELECTOR
RE-RECORDING:
1. CUTTING RECORDS OF VOICE OR MUSIC THROUGH MICROPHONE.
2. CUTTING RECORDS OF PHONOGRAPH SELECTIONS USING AUXILIARY TURNTABLE.
3. CUTTING RECORDS OF PHONOGRAPH SELECTIONS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.
RADIO:
1. RADIO PROGRAMS.
2. RADIO PROGRAMS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
VICTROLA:
1. PHONOGRAPH RECORD SELECTIONS.
2. PHONOGRAPH SELECTIONS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
3. MICROPHONE ONLY (PA).
RECORDING:
1. CUTTING RECORDS OF RADIO PROGRAMS.
2. CUTTING RECORDS OF RADIO PROGRAMS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.




*Controls on VHR-207 and VHR-407. Model VHR-202 Controls are identical, except "B" Band is omitted.*

The procedure is as follows:

1. Turn the service selector to position "1."

2. Connect the RCA Victrola Attachment pickup cable to the jack on rear of the Home Recorder radio chassis.

3. Place the "original" record on the RCA Victrola Attachment, turn its volume control fully clockwise, and place its pickup on the "original" record.

4. Adjust the radio-phono volume control so the "Magic Eye" just closes on loudest passages, then lift pickup off the RCA Victrola Attachment.

5. Start the recorder by pushing turntable switch "on," and placing the recorder arm on the recording disc.

6. Put the RCA Victrola Attachment pickup arm on the "original" record. The recorder will cut a duplicate of this record, which may be played-back as described previously.

## Mixed Recording.—

The RCA Home Recorders have complete flexibility for mixed recordings of radio, microphone, and phonograph. The various possible combinations are clearly shown in the illustration of the service selector control.

In mixed recordings, the radio-phono volume control regulates the recording level for radio, and for the RCA Victrola Attachment.

The microphone volume control regulates the recording level of the microphone only. In using the microphone on mixed recordings, or mixed PA, it should be placed as far as possible from the loudspeaker and faced away from the loudspeaker to avoid feed-back howl. (An extension cord may be added if necessary.)

## "Rumble".—

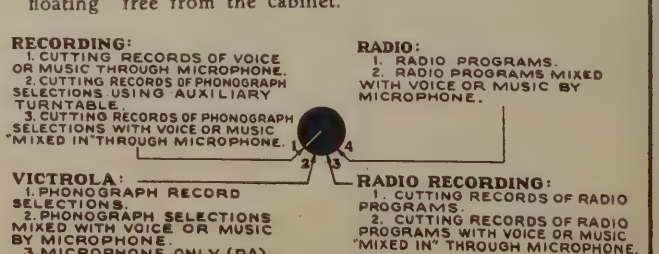
1. **Excessive cutting pressure will cause rumble.** The width of the groove should almost equal, but not exceed, the distance between grooves.

Check the groove width each time a new stylus is used, and each time a new disc is used.

2. **When recording, use the maximum bass response,** by turning the power-bass control to "full" (just past the click of the power switch).

3. **On play-back, use the least bass response,** by turning the power-bass control to "speech" (full clockwise).

4. Be certain that the motor board and mechanism is "floating" free from the cabinet.


RECORDING:
1. CUTTING RECORDS OF VOICE OR MUSIC THROUGH MICROPHONE.
2. CUTTING RECORDS OF PHONOGRAPH SELECTIONS USING AUXILIARY TURNTABLE.
3. CUTTING RECORDS OF PHONOGRAPH SELECTIONS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.
RADIO:
1. RADIO PROGRAMS.
2. RADIO PROGRAMS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
VICTROLA:
1. PHONOGRAPH RECORD SELECTIONS.
2. PHONOGRAPH SELECTIONS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
3. MICROPHONE ONLY (PA).
RADIO RECORDING:
1. CUTTING RECORDS OF RADIO PROGRAMS.
2. CUTTING RECORDS OF RADIO PROGRAMS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.

# Replacement Parts—Model VHR-202

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-548)** |
| 34133 | Arm—Actuating arm for service selector switch |
| 36342 | Board—"Antenna-Ground" board |
| 30766 | Cap—Rubber cap for tuning tube |
| 36336 | Capacitor—Mica trimmer comprising 3 sections of 5-50 mmfd. each, and 1 section of 3-30 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 34699 | Capacitor—100 mmfd., mica |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 34700 | Capacitor—120 mmfd. |
| 13003 | Capacitor—180 mmfd. |
| 30433 | Capacitor—470 mmfd. |
| 35877 | Capacitor—720 mmfd. |
| 36679 | Capacitor—5,100 mmfd. |
| 36163 | Capacitor—.001 mfd. |
| 33806 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 36569 | Capacitor—Electrolytic comprising 1 section of 15 mfd. 400 volts, 1 section of 10 mfd. 400 volts, and 1 section of 40 mfd., 25 volts |
| 32405 | Capacitor—Electrolytic 16 mfd., 350 volts |
| 31581 | Cell—Bias cell |
| 34285 | Clip—Tuning indicator tube clip |
| 35965 | Coil—Antenna coil—"C" band |
| 37064 | Coil—Choke coil |
| 36557 | Coil—Oscillator coil |
| 37021 | Control—Microphone volume control |
| 37604 | Control—Volume control and speaker shut-off switch |
| 32634 | Cord—Indicator drive cord (approx. 44 in. overall lg.) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 36420 | Condenser—Variable tuning condenser |
| 36332 | Drum—Drive drum |
| 31580 | Holder—Bias cell holder |
| 35870 | Indicator—Station selector indicator |
| 37017 | Plate—Dial plate complete with drive cord pulleys—less tuning indicator tube clip, screen and dial |
| 11824 | Plug—2 contact female plug for microphone cable—less shell |
| 30868 | Plug—2 contact female plug for motor cable |
| 36009 | Plug—2 prong male plug for antenna loop cable |
| 32641 | Plug—3 prong male plug for selector switch cable |
| 5040 | Plug—4 contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulley |
| 33322 | Resistor—5 ohms |
| 13988 | Resistor—10 ohms, ½ watt |
| 11565 | Resistor—15 ohms, ½ watt |
| 36892 | Resistor—270 ohms, 3 watts |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 12265 | Resistor—6,800 ohms, ½ watt |
| 3219 | Resistor—18,000 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 13669 | Resistor—22,000 ohms, 2 watts |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 12413 | Resistor—680,000 ohms, ½ watt |
| 12013 | Resistor—1.0 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt |
| 30208 | Resistor—1.2 meg., ½ watt |
| 12201 | Resistor—1.5 meg., ½ watt |
| 5028 | Resistor—1.8 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 14752 | Resistor—2.7 meg., ½ watt |
| 37026 | Screen—Service selector indicator screen |
| 37018 | Screen—Screen marked "Indicator" |
| 14350 | Screw—No. 8-32 sq. hd. set screw for drive drum |
| 36340 | Shaft—Tuning shaft |
| 35772 | Shield—50-60 cycle power transformer bottom shield |
| 35709 | Shield—50-60 cycle power transformer top shield |
| 37025 | Slider—Indicator slider complete—less screen |
| 31364 | Socket—Dial lamp socket |
| 33514 | Socket—F.M. and television adapter socket |
| 33165 | Socket—Recorder head socket |
| 31251 | Socket—Tube socket |
| 13871 | Socket—Tuning tube socket |
| 31418 | Spring—Indicator cord spring |
| 12007 | Spring—Retaining spring for oscillator coil, core and stud |
| 37024 | Switch—H.F. tone switch |
| 37023 | Switch—L.F. tone and power switch |
| 36468 | Switch—Range switch |
| 37020 | Switch—Service selector switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 37175 | Transformer—Output transformer |
| 35588 | Transformer—Power transformer 105-120 volts, 25 cycles |
| 35959 | Transformer—Power transformer 105-120 volts, 50-60 cycles—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **MICROPHONE ASSEMBLIES** |
| 37028 | Base—Microphone base only |
| 37033 | Cable—Microphone cable (12 ft. long) complete—less spring, shield, and plug |
| 37029 | Cover—Front cover and screen |
| 37030 | Crystal—Microphone crystal and holder |
| 37031 | Gasket—Moulded rubber ring |
| 37034 | Housing—Crystal housing and handle |
| 14793 | Plug—2-prong male plug for microphone cable |
| | **SPEAKER ASSEMBLIES (RL-70M6)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil, 1,060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4-prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| | **MISCELLANEOUS ASSEMBLIES** |
| 16541 | Button—Plug button |
| 36299 | Button—Push button |
| 13103 | Cap—Pilot lamp cap |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 36462 | Clamp—Dial clamp |
| 36002 | Coil—Loop primary coil |
| 35803 | Coil—P.B. oscillator coil |
| 37133 | Coil—P.B. oscillator coil—low frequency side |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 36328 | Cover—Compartment lamp lead cover |
| 37279 | Decalcomania—Control panel decal |
| 36386 | Decalcomania—"His Master's Voice" decal |
| 37148 | Decalcomania—Power tone decal |
| 35467 | Decalcomania—"RCA Victrola" decal |
| 35393 | Decalcomania—Television decal |
| 37147 | Decalcomania—Tone switch decal |
| 37280 | Dial—Glass dial scale |
| 36327 | Escutcheon—Dial scale escutcheon—less dial |
| 36027 | Escutcheon—Push button escutcheon—less buttons |
| 30698 | Hinge—Cabinet lid hinge |
| 36298 | Knob—Radio volume control, microphone volume control, range switch, tuning, L.F. tone and power switch or H.F. tone control knob |
| 36297 | Knob—Service selector switch knob |
| 5117 | Lamp—Compartment lamp |
| 11765 | Lamp—Dial lamp |
| 11891 | Lamp—Indicator lamp |
| 36590 | Loop—Antenna loop complete |
| 36149 | Marker—Station selector markers |
| 36694 | Pull—Door pull |
| 36246 | Receptacle—Needle package receptacle |
| 35740 | Shade—Compartment lamp shade |
| 35999 | Socket—2-contact female socket for antenna loop cable |
| 36422 | Socket—3-contact female socket for selector switch cable |
| 35575 | Spring—Lid support spring |
| 30900 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push button |
| 36693 | Support—Cabinet lid support |
| 36423 | Switch—Selector switch |

VHR-202, VHR-207, VHR-407

# Replacement Parts—Models VHR-207 and VHR-407

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** Model VHR-207 (RC-547) Model VHR-407 (RC-547A) |
| 34133 | Arm—Indicator actuating arm |
| 36342 | Board—"Antenna Ground" board |
| 30766 | Cap—Rubber cap for tuning tube |
| 36336 | Capacitor—Mica trimmer comprising 3 sections of 5-50 mmfd. each, and 1 section of 3-30 mmfd. |
| 31868 | Capacitor—22 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 12813 | Capacitor—82 mmfd. |
| 34699 | Capacitor—100 mmfd., mica |
| 12720 | Capacitor—100 mmfd., moulded mica |
| 12724 | Capacitor—120 mmfd. |
| 14712 | Capacitor—180 mmfd., mica |
| 12488 | Capacitor—270 mmfd. |
| 30433 | Capacitor—470 mmfd. |
| 36421 | Capacitor—700 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 36679 | Capacitor—5,100 mmfd. |
| 37102 | Capacitor—.001 mfd. |
| 33806 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 5148 | Capacitor—.007 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4886 | Capacitor—.05 mfd., 400 volts (C27) |
| 32787 | Capacitor—.05 mfd., 400 volts (C22) |
| 14626 | Capacitor—.07 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 12741 | Capacitor—0.5 mfd. |
| 36589 | Capacitor—Electrolytic—15 mfd., 400 volts |
| 32405 | Capacitor—Electrolytic—16 mfd., 350 volts |
| 34889 | Capacitor—Electrolytic—20-20 mfd., 450 volts |
| 31584 | Capacitor—Electrolytic 40 mfd., 150 volts |
| 31581 | Cell—Bias cell |
| 30716 | Clip—Tuning tube clip |
| 35965 | Coil—Antenna coil—"C" band |
| 37064 | Coil—Choke coil |
| 36334 | Coil—Oscillator coil |
| 35876 | Coil—Peaking coil—10,000 ohms, ½ watt |
| 36420 | Condenser—Variable tuning condenser |
| 37024 | Control—H. F. tone control |
| 37023 | Control—L. F. tone control and power switch |
| 37021 | Control—Microphone volume control |
| 37019 | Control—Radio-phono volume control and speaker switch |
| 32634 | Cord—Indicator drive cord (approximately 44 in. overall length) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 36332 | Drum—Drive drum |
| 34499 | Holder—Bias cell holder |
| 35870 | Indicator—Station selector indicator |
| 37017 | Plate—Dial plate complete less tube clip, thumb screw and indicator |
| 30868 | Plug—2 contact female plug for motor cable |
| 36009 | Plug—2 prong male plug for loop cable |
| 32641 | Plug—3 prong male plug for selector switch cable |
| 12493 | Plug—5 contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulley |
| 37143 | Resistor—9 ohms, 1 watt |
| 14660 | Resistor—18 ohms, ½ watt |
| 37144 | Resistor—72 ohms, 2 watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 34473 | Resistor—2,000 ohms, 10 watt |
| 12955 | Resistor—3,900 ohms, ½ watt |
| 30788 | Resistor—4,700 ohms, 1 watt |
| 12265 | Resistor—6,800 ohms, ½ watt |
| 13045 | Resistor—18,000 ohms, ½ watt |
| 13669 | Resistor—22,000 ohms, 2 watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 14138 | Resistor—68,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 30963 | Resistor—820,000 ohms, ½ watt |
| 12013 | Resistor—1 megohm, 1/10 watt |
| 13730 | Resistor—1 megohm, ½ watt |
| 30208 | Resistor—1.2 megohm, ½ watt |
| 12201 | Resistor—1.5 megohm, ½ watt |
| 12679 | Resistor—2.2 megohm, ½ watt |
| 30962 | Resistor—8.2 megohm, ½ watt |
| 37063 | Resistor—Voltage divider comprising 1 section of 2,400 ohms, 12 watt, 1 section of 1,700 ohms, 7.2 watt |
| 37018 | Screen—Screen marked "Indicator" |
| 37026 | Screen—Service selector indicator screen marked "Re-recording, Victrola, Recording and Radio" |
| 14350 | Screw—No. 8-32 square head set screw for drive drum |
| 36340 | Shaft—Tuning shaft |
| 36058 | Shield—50-60 cycle power transformer top end shield for Model VHR 207 |
| 37062 | Shield—50-60 cycle power transformer top end shield for Model VHR 407 |
| 36059 | Shield—50-60 cycle power transformer bottom end shield |
| 37025 | Slider—Sliding indicator assembly less screen |
| 31364 | Socket—Dial lamp socket |
| 11824 | Socket—Microphone input socket |
| 33514 | Socket—Phono input socket |
| 33165 | Socket—Recording head socket |
| 31251 | Socket—Tube socket |
| 13871 | Socket—Tuning tube socket |
| 12007 | Spring—Adjustable core and stud retaining spring |
| 31418 | Spring—Drive cord spring |
| 37020 | Switch—Phono-radio recording selector switch |
| 36341 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer |
| 37065 | Transformer—Second I.F. transformer |
| 37022 | Transformer—Output transformer |
| 37048 | Transformer—Power transformer—105-125 volt, 50-60 cycle, less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES** RL-70-M-5 |
| 13867 | Cap—Dust cap |
| 37104 | Coil—Field coil—1,250 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 31539 | Plug—5 prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36461 | Button—Plug button |
| 36299 | Button—Push button |
| 13103 | Cap—Pilot lamp cap |
| 35998 | Capacitor—Mica trimmer comprising 1 section of 3-30 mmfd. |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 36463 | Capacitor—18 mmfd., ceramic |
| 36462 | Clamp—Dial clamp |
| 36002 | Coil—Loop primary coil |
| 37133 | Coil—P.B. oscillator coil—low frequency end |
| 35803 | Coil—P.B. oscillator coil |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coil |
| 36328 | Cover—Stainless steel cover for compartment lamp leads |
| 37146 | Decalcomania—Control panel decalcomania |
| 37148 | Decalcomania—"Power-Tone" decalcomania |
| 35393 | Decalcomania—Television decalcomania |
| 37147 | Decalcomania—Tone switch decalcomania |
| 35467 | Decalcomania—"RCA Victrola" decal |
| 36386 | Decalcomania—"His Master's Voice" decal |
| 37145 | Dial—Glass dial scale |
| 36327 | Escutcheon—Dial scale escutcheon less dial |
| 36027 | Escutcheon—Push button escutcheon |
| 36608 | Hinge—Cabinet lid hinge, L. H. for VHR 407. |
| 36609 | Hinge—Cabinet lid hinge R. H. for VHR 407. |
| 34870 | Hinge—Top and bottom hinges for L.H. door for VHR 207 |
| 34871 | Hinge—Top and bottom hinges for R. H. door for VHR 207 |
| 30698 | Hinge—Cabinet lid hinge for VHR 207 |
| 36610 | Hinge—Top and bottom door hinges for VHR 407 |
| 36298 | Knob—Radio-phono volume control, selector switch, microphone volume control, tuning, L. F. tone or H. F. tone control knob |
| 36297 | Knob—Range switch knob |
| 11765 | Lamp—Dial lamp |
| 11891 | Lamp—Indicator lamp |
| 5117 | Lamp—Record player lamp |
| 36323 | Loop—Antenna loop complete |
| 36149 | Marker—Station selector markers |
| 31470 | Mounting—Spring mounting for motorboard |
| 36422 | Plug—3 contact female socket for selector cable. |
| 36329 | Pull—Cabinet door pull |
| 36413 | Pull—Door pull for VHR 407 |
| 36246 | Receptacle—Needle book receptacle |
| 35740 | Shade—Compartment lamp shade |
| 35999 | Socket—Antenna loop cable socket |
| 31364 | Socket—Compartment lamp socket |
| 30536 | Spring—Cabinet lid support spring for support No. 34793 |
| 33083 | Spring—Cabinet lid support spring for support No. 35830 |
| 36802 | Spring—Conical spring for loop support bracket |
| 14270 | Spring—Knob retaining spring |
| 34053 | Spring—Push button retaining spring |
| 34793 | Support—Cabinet lid support—L. H. |
| 35830 | Support—Cabinet lid support—R. H. for VHR 407 |
| 36423 | Switch—Selector switch |

# MODELS V-205 and V-405

**Chassis Nos. RC-521 and RC-521-B**

## Nine-Tube, Three-Band, AC, Superheterodyne Receivers and Phonographs

### Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast (A) | 540-1,600 kc |
| Medium Wave (B) | 1,550-4,000 kc |
| Short Wave (C) | 5,800-18,000 kc |

INTERMEDIATE FREQUENCY ..... 455 kc

ELECTRIC TUNING

| No. of Stations | Appr. Range |
|---|---|
| 1 | 540-1,030 kc |
| 2 | 610-1,250 kc |
| 2 | 740-1,430 kc |
| 1 | 880-1,550 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector—Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6H6 | 2nd Detector, A.V.C. |
| (5) RCA-6SF5 | A-F Amplifier |
| (6) RCA-6SF5 | Phase Inverter |
| (7) RCA-6F6-G | Power Output |
| (8) RCA-6F6-G | Power Output |
| (9) RCA-5U4-G | Rectifier |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

PILOT LAMPS ..... 4 Mazda Type 51—6-8 volts, 0.2 amps.
1 Mazda Type 55—6-8 volts, 0.4 amps.

LOUDSPEAKER

| | |
|---|---|
| Type | 12-inch electrodynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |
| Identification Number | RL-70M-2 |

POWER SUPPLY RATINGS

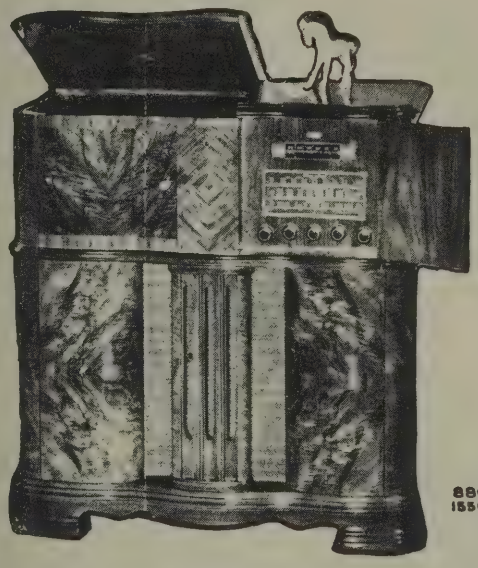
| | |
|---|---|
| 105-125 volts, 25, 50 or 60 cycles | 155 watts |
| 105-125, 205-250 volts, 50 or 60 cycles | 155 watts |

AUTOMATIC PHONOGRAPH

| | |
|---|---|
| Type Pickup | Crystal |
| Impedance | 100,000 ohms at 1,000 c.p.s. |
| Average Output Voltage | 1.5 volts across 0.5 megohm at 1,000 c.p.s. |
| Record Capacity | Eight 10-inch or seven 12-inch records |

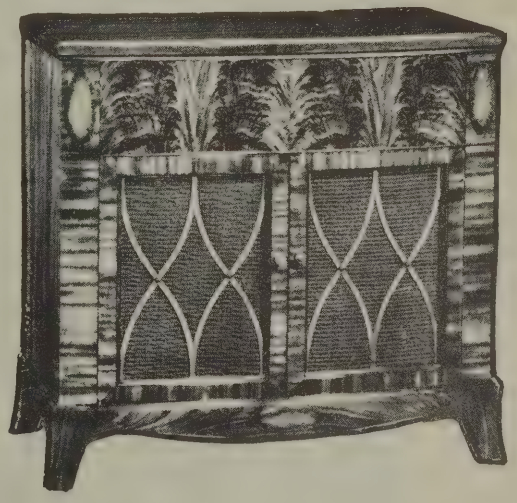
| Cabinet Dimensions (inches) | Height | Width | Depth |
|---|---|---|---|
| V-205 | 35-15/16 | 35 | 17⅛ |
| V-405 | 33-15/16 | 34⅜ | 18-15/16 |
| Chassis Base Dimensions (inches) | 2¾ | 11¼ | 10½ |
| Over-all Chassis Height | | | 7¾ inches |

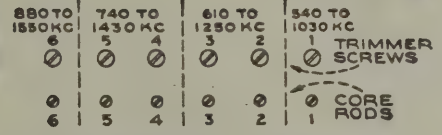
| Weight (lbs.) | Net | Shipping |
|---|---|---|
| V-205 | 102 | 145 |
| V-405 | 118 | 147 |
| Tuning Drive Ratio | | 13-1 |



V-205

V-405






### Push-Button Adjustment

Six station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across the center and "G" terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L22) to receive the station. It may be necessary to maintain approximate tracking between antenna and oscillator to receive weak stations. Approximate tracking will be indicated by noise, when tuned off a station, which will disappear when the station is correctly tuned.
4. After oscillator core is adjusted properly, adjust C14 for maximum output.
   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the five remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

Owing to the relatively high RF gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases, it is advisable to unscrew the push-button loop trimmers to minimum capacity before adjusting the push-button magnetite cores.

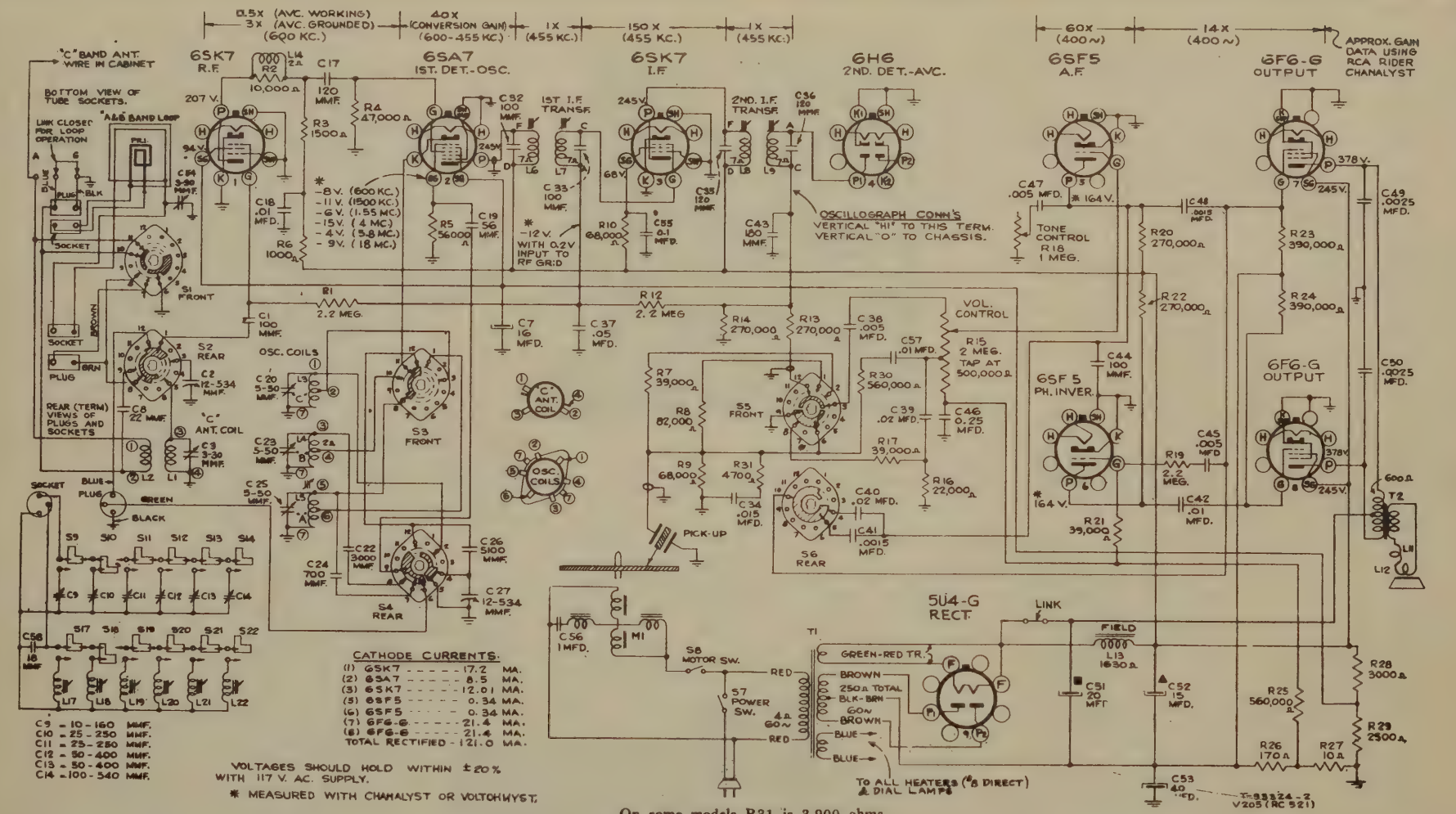
### Phonograph Information

For information regarding the automatic record changer refer to service note covering RP-152 record changers.

### V-205-A

**Using RP-153 Automatic Mechanism:**

A limited number of V-205 instruments contain the RP-153 record changer. These are labeled V-205-A. Refer to Service Note on RP-153 for service data and replacement parts.



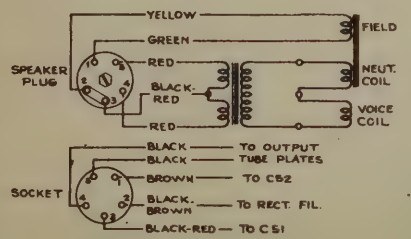

C9 - 10 - 160 MMF.
C10 - 25 - 250 MMF.
C11 - 25 - 250 MMF.
C12 - 50 - 400 MMF.
C13 - 50 - 400 MMF.
C14 - 100 - 540 MMF.

CATHODE CURRENTS.

| | |
|---|---|
| (1) 6SK7 | 17.2 MA. |
| (2) 6SA7 | 8.5 MA. |
| (3) 6SK7 | 12.01 MA. |
| (5) 6SF5 | 0.34 MA. |
| (6) 6SF5 | 0.34 MA. |
| (7) 6F6-G | 21.4 MA. |
| (8) 6F6-G | 21.4 MA. |
| TOTAL RECTIFIED | 121.0 MA. |

VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.




*Speaker Connections*

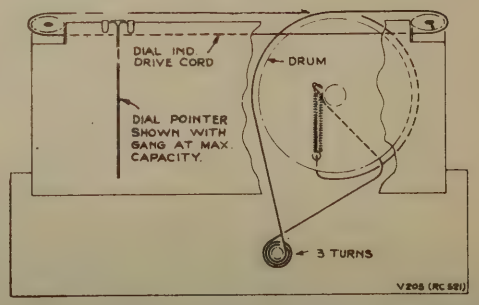
On some models R31 is 3,900 ohms.

**Radio Break-Through on Phono:**

Radio break through may occur in these models, due to capacity coupling between the I.F. 6SK7 plate lead and 6F6G grid leads. When this condition exists, dress the 6F6G grid leads down against the chassis well away from the 6SK7 I.F. plate lead.

**Increasing Sensitivity:**

These models have an untuned R-F stage which is resistance-coupled to the 1st-detector. The sensitivity may be increased by changing the R-F plate load resistor to a higher value, between 6,000 and 10,000 ohms. This change is not recommended in metropolitan localities owing to possiblity of cross-modulation.



# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagrams.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

Each method is described below.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

4. After completion of alignment, replace the glass dial in cabinet, taking care that the fibre light shields are in correct position at ends of dial.

**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

2. Place a fla 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale. For example, 1,100 kc is approximately 4 inches from the reference mark.

**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

| Steps | Connect the high side of test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | 6SK7 I-F grid in series with .01 mfd. | 455 kc | "A" Band Quiet Point between 550 and 750 kc | L9, L8 (2nd I-F Trans.) |
| 2 | 6SA7 grid in series with 0.01 mfd. | | | L7, L6 (1st I-F Trans.) |
| 3 | | 1,500 kc | "A" Band 1,500 kc | C25 (osc.) |
| 4 | | 600 kc | "A" Band 600 kc | L5 (osc.) |
| 5 | Repeat steps 3 and 4. | | | |
| 6 | 6SA7 grid in series with 0.01 mfd. | 2.44 mc | "B" Band 2.44 mc | C23 (osc.) |
| 7 | Ant. terminal in series with 47 mmf. | 15.2 mc | "C" Band 15.2 mc | C20* (osc.) C3 (ant.) |
| | Assemble chassis in cabinet. | | | |
| 8 | Radiation Loop | 1,500 kc | Signal | C54 (ant.) (on loop assembly) |
| 9 | Radiation Loop | 600 kc | 600 kc | L5 (osc.) (Rock in) |
| 10 | Repeat steps 9 and 10. | | | |

* Use minimum capacity peak.

Precautionary Lead Dress:

1. "C" Band lead from antenna coil high side to No. 5 terminal on range switch must be held to correct length.

2. Lead from No. 3 terminal on rear switch to the variable condenser must be held to correct length and dressed away from side apron.

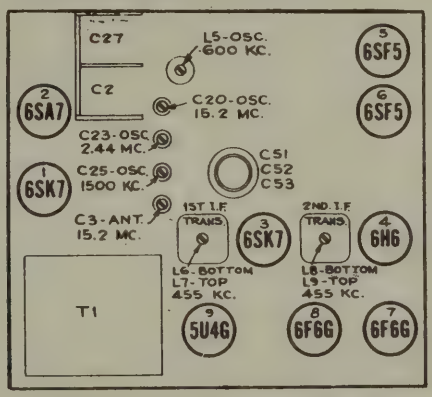
3. Lead from No. 4 terminal on front section of range switch must be held to correct length and dressed to rear of wafer.

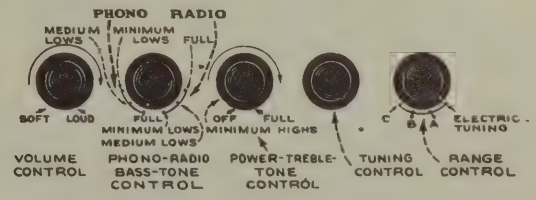
4. Lead from No. 2 terminal on front section of range switch to oscillator must be held to length and dressed to the rear of the wafer.

5. Dress the leads to the power switch as free as possible.

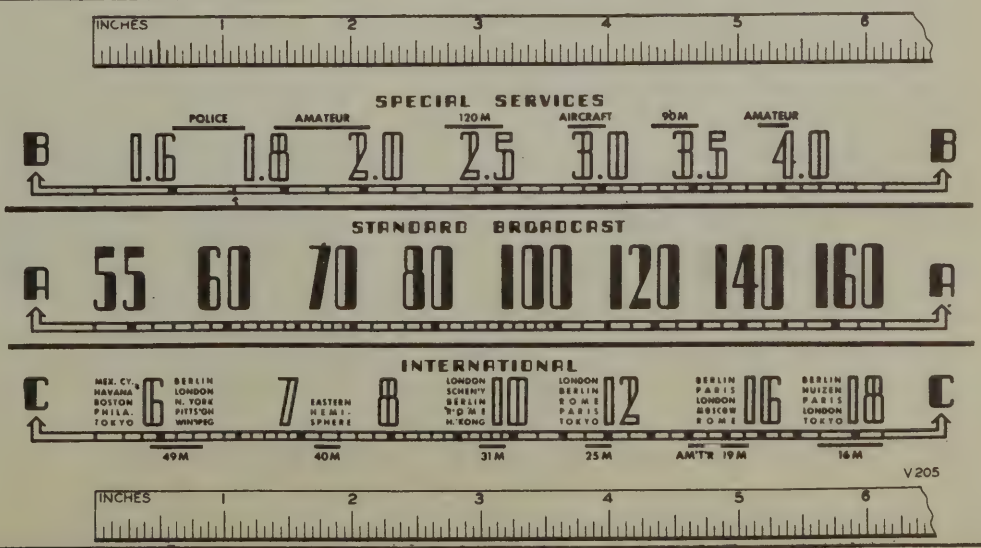
6. Dress lead from pickup plug to terminal board on side apron down and towards the side apron.

7. Dress plate leads on output tubes toward the chassis.




## Calibration Scale


INCHES 1 2 3 4 5 6
SPECIAL SERVICES
POLICE
AMATEUR
120 M
AIRCRAFT
90 M
AMATEUR
B 1.6 1.8 2.0 2.5 3.0 3.5 4.0 B
STANDARD BROADCAST
A 55 60 70 80 100 120 140 160 A
INTERNATIONAL
C MEX. CY. HAVANA BOSTON PHILA. TOKYO 6 BERLIN LONDON N. YORK PITTSBG WINNIPEG 7 EASTERN HEMI-SPHERE 8 LONDON SCHEN'Y BERLIN ROME H. KONG 10 LONDON BERLIN ROME PARIS TOKYO 12 BERLIN PARIS LONDON MOSCOW ROME 16 BERLIN HUIZEN PARIS LONDON TOKYO 18 C
49M 40M 31M 25M AM'TR 19M 16M
V205
INCHES 1 2 3 4 5 6

# Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-521 and 521-B)** |
| 36342 | Board—"Antenna-Ground" board |
| 36336 | Capacitor—Mica trimmer comprising 3 sections of 5-50 mmfd., and 1 section of 3-30 mmfd. |
| 31868 | Capacitor—22 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., mica |
| 34700 | Capacitor—120 mmfd., mica |
| 12724 | Capacitor—120 mmfd., moulded |
| 13003 | Capacitor—180 mmfd. |
| 36421 | Capacitor—700 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 14722 | Capacitor—5,100 mmfd. |
| 33806 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 32405 | Capacitor—Electrolytic 16 mfd., 350 volts |
| 34533 | Capacitor—Electrolytic comprising 1 section of 20 mfd., 450 volts, 1 section of 15 mfd., 350 volts, and 1 section of 40 mfd., 25 volts |
| 35965 | Coil—Antenna coil—"C" band |
| 36334 | Coil—Oscillator coil |
| 35876 | Coil—Peaking coil—10,000 ohms |
| 37133 | Coil—Push button oscillator coil—low frequency end |
| 36420 | Condenser—Variable tuning condenser |
| 35788 | Core—Adjusting core and stud for oscillator coil |
| 36339 | Control—High tone and power control |
| 36338 | Control—Low tone and phono. radio control |
| 36337 | Control—Volume control |
| 36332 | Drum—Drive drum |
| 35870 | Indicator—Station selector indicator |
| 36333 | Plate—Dial plate complete with pulleys—less dial |
| 30868 | Plug—2 contact female plug for phono. motor cable |
| 36009 | Plug—2 prong male plug for loop cable |
| 32641 | Plug—3 prong male plug for selector cable |
| 12493 | Plug—5 contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulley |
| 34537 | Resistor—Voltage divider comprising 1 section of 3,000 ohms, 6 watts, 1 section of 2,500 ohms, 4.2 watts, 1 section of 10 ohms, .18 watt and 1 section of 170 ohms, 3.2 watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 30654 | Resistor—1,500 ohms, ½ watt |
| 30146 | Resistor—4,700 ohms, ½ watt |
| 13998 | Resistor—22,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 12199 | Resistor—270,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 14350 | Screw—No. 8-32 square head set screw for drum |
| 36340 | Shaft—Tuning shaft |
| 36059 | Shield—Power transformer bottom shield (V-405) |
| 36661 | Shield—Power transformer top shield (V-405) |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono. input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 36341 | Switch—Range switch |
| 35636 | Transformer—First I-F transformer |
| 35790 | Transformer—Second I-F transformer |
| 34693 | Transformer—Power transformer—110 volts, 25 cycles (V-205) |
| 34539 | Transformer—Power transformer—110 volts, 50-60 cycles (V-205) |
| 36660 | Transformer—Power transformer—105-120 volts, 50-60 cycles—less end shields (V-405) |
| 35969 | Washer—"C" washer for tuning shaft |
| | **SPEAKER ASSEMBLIES (RL-70-M-2)** |
| 13867 | Cap—Dust cap |
| 36331 | Coil—Field coil—1,630 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 31539 | Plug—5 prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 33444 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36027 | Bezel—Push button bezel (V-405) |
| 36324 | Bracket—Support bracket for record changer sealing pan |
| 36461 | Button—Plug button for motor board panel (V-405) |
| 36299 | Button—Push button and spring |
| 13103 | Cap—Pilot lamp cap |
| 35998 | Capacitor—Mica trimmer—1 section of 3-30 mmfd. |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd.—for P. B. switch |
| 36463 | Capacitor—18 mmfd., ceramic for—P. B. switch. |
| 36462 | Clamp—Clamp to hold glass dial (V-405) |
| 31382 | Clip—P. B. coil mounting clip (V-405) |
| 36002 | Coil—Loop loading coil |
| 35803 | Coil—Push button oscillator coil |
| 35871 | Core—Adjustable core and stud for push button oscillator coils |
| 36460 | Cover—Metal channel for pilot lamp leads (V-405) |
| 36328 | Cover—Compartment lamp leads cover |
| 36554 | Decalcomania—Control panel decal. |
| 36386 | Decalcomania—Trade mark decal. (His Master's Voice) |
| 35467 | Decalcomania—Trade mark decal. (RCA Victrola) |
| 35393 | Decalcomania—Television decal |
| 36555 | Dial—Glass dial scale |
| 36327 | Escutcheon—Dial scale escutcheon—less dial |
| 36027 | Escutcheon—Push button escutcheon—less buttons |
| 36610 | Hinge—Door hinge—1 upper and 1 lower—for 1 door (V-405) |
| 30698 | Hinge—Cabinet lid hinge (V-205) |
| 36608 | Hinge—Lid hinge for L. H. section of lid (V-405) |
| 36609 | Hinge—Lid hinge for R. H. section of lid (V-405) |
| 34871 | Hinge—Door hinges—1 set for 1 door (V-205) |
| 36297 | Knob—Range switch or phono. radio switch knob |
| 36298 | Knob—Volume control, tuning or power switch knob |
| 5117 | Lamp—Compartment lamp |
| 11765 | Lamp—Dial lamp |
| 36323 | Loop—Antenna loop complete |
| 36149 | Marker—Push button marker |
| 36683 | Mounting—Mounting hardware complete for 1 motorboard |
| 36325 | Nut—Wing nut for support bracket |
| 36326 | Pan—Fibre pan to seal record changer |
| 36422 | Plug—3 contact female plug for selector switch assembly |
| 36329 | Pull—Door pull |
| 36413 | Pull—Door pull (V-405) |
| 36246 | Receptacle—Needle book receptacle |
| 35740 | Shade—Compartment lamp shade |
| 35999 | Socket—2-contact female socket located on loop |
| 30536 | Spring—Cabinet lid support spring L. H. |
| 33083 | Spring—Cabinet lid support spring R. H. |
| 36802 | Spring—Conical spring for loop bearing |
| 34053 | Spring—Retaining spring for push button |
| 30900 | Spring—Retaining spring for knobs |
| 34793 | Support—Cabinet lid support L. H. |
| 35830 | Support—Cabinet lid support R. H. |
| 36423 | Switch—Selector switch |

**FOR RECORD CHANGER REPLACEMENT PARTS ON V-205 SEE SERVICE NOTES ON RP-152B, AND FOR V-405 SEE NOTES ON RP-152J**

## V-205-A

### Using RP-153 Automatic Mechanism:

A limited number of V-205 instruments contain the RP-153 record changer. These are labeled V-205-A. Refer to Service Note on RP-153 for service data and replacement parts.

# MODELS V-209 and V-210

## Chassis No. RC-573 and RC-573A

## Eight-Tube, Two-Band, A-C, Radio-Phonograph Combinations

*(Refer to RP-158 Service Note for Data on Automatic Mechanism)*

### Electrical and Mechanical Specifications

**Frequency Ranges**

| | |
|---|---|
| Standard Broadcast "A" | 540-1,600 kc |
| Short Wave "C" | 9.4-15.4 mc |

**Intermediate Frequency** ..... 455 kc

**Tube Complement**

| | |
|---|---|
| (1) RCA-6SG7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Det., Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Det., A.V.C. and A-F Amplifier |
| (5) RCA-6SQ7 | Phase Inverter |
| (6) RCA-6K6GT | Power Output |
| (7) RCA-6K6GT | Power Output |
| (8) RCA-5Y3G | Rectifier |

**Power Supply Rating**

| | |
|---|---|
| 105-125 volts, 60 cycles | 115 watts total |
| 105-125 volts, 50 cycles | 115 watts total |
| 105-125 volts, 25 cycles | 115 watts total |

| | Model V-209 | Model V-210 |
|---|---|---|
| Height (inches) | 34 | 42 |
| Width (inches) | 31⅜ | 33 |
| Depth (inches) | 16¾ | 16 |
| Weight lbs. (net) | 82 | 88 |

**Pilot Lamps** ..... (2) Mazda No. 51, 6-8 volts, 0.2 amps.

**Compartment Lamps** ..... (2) Mazda No. 55, 6-8 volts, 0.4 amps.

**Loudspeaker**

| | |
|---|---|
| Electrodynamic | (RL-70L6) |
| Size | 12-inch |
| V.C. impedance at 400 cycles | 2.2 ohms |

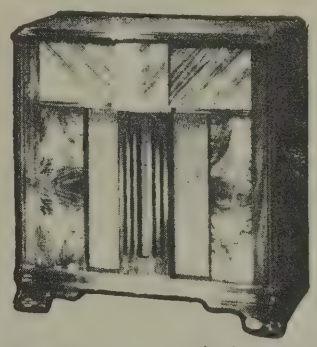
**Power Output Rating**

| | |
|---|---|
| Undistorted | 5 watts |
| Maximum | 5.5 watts |

**Phonograph**

| | |
|---|---|
| Type | Automatic (RP-158) |
| Record Capacity | Twelve 10-in., Ten 12-in. |
| Turntable Speed | 78 r.p.m. |
| Type Pickup | Crystal |
| Motor Power Consumption | 17 watts |

| | |
|---|---|
| Chassis Length (inches) | 10½ |
| Chassis Width (inches) | 11½ |
| Chassis Height (inches) | 3 |
| Overall Chassis Height (inches) | 7 |
| Tuning Drive Ratio | 15-1 |



*Model V-209*

*Push-Button Model V-210*

### Push Button Adjustments

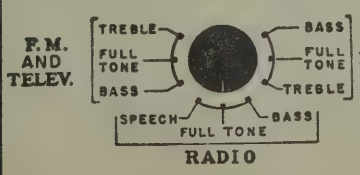
The push buttons connect to separate magnetite-core oscillator coils and separate ant. circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast position and manually tune in the first station on the list.
3. Turn range switch to push-button position and press in the left-hand button.
4. Adjust No. 1 oscillator core to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust core for peak output.
5. Adjust No. 1 antenna trimmer capacitor for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining stations.

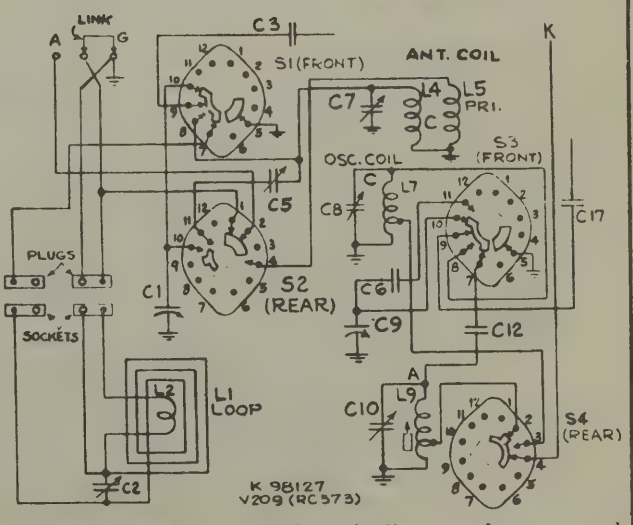
On the 880 to 1,600 kc push-button, the higher frequency stations may be received with osc. core either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.




*Control for both Models*

*Controls for Model V-209*




*Schematic diagram of antenna and oscillator switch connections for Model V-209. This model does not include push-button tuning. Otherwise the same as schematic of V-210.*

## Alignment Procedure

*The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.*

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

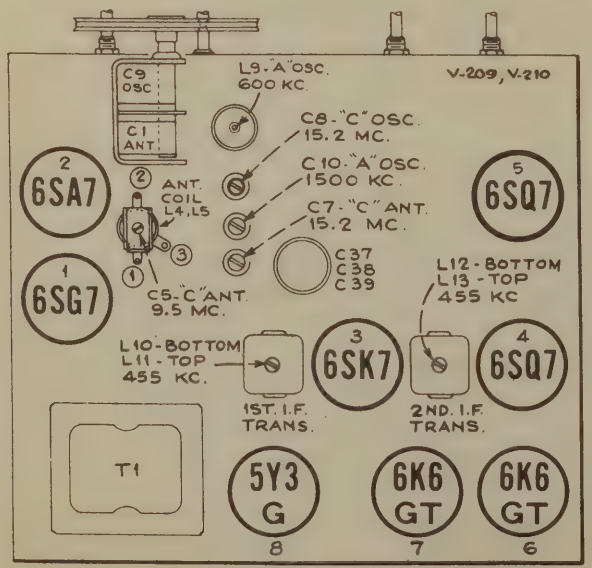
**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the scale printed in this service note can be used as an accurate and convenient substitute for the regular dial.

**Using Tuning Dial.—**

1. Remove glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the glass dial in place.

**"C" Band Reception**—For best reception on "C" band with an outside antenna, adjust the trimmer screw on the RF coil on the chassis. Turn screw carefully with a special screwdriver (RCA Stock No. 31031) while the receiver is tuned to a station in the 31-meter band, and make setting for best reception. If returning to internal antenna at any time, close the link on the center terminal and adjust "C" band antenna trimmer for best reception on 31-meter band.

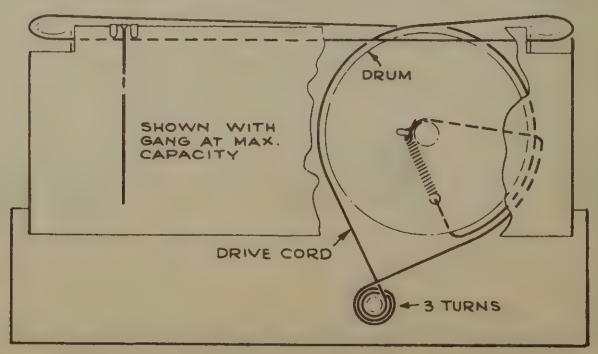


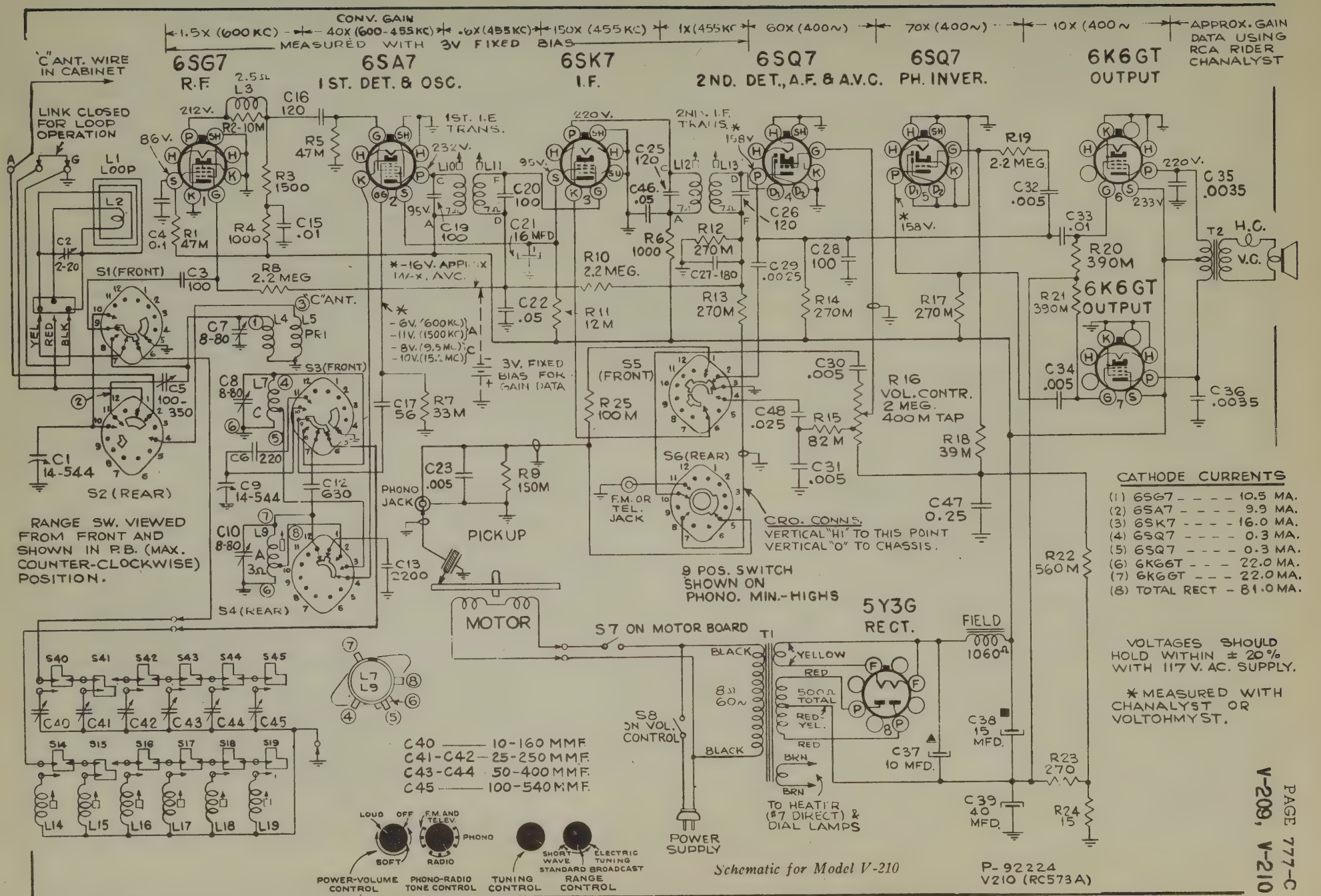

| Steps | Connect test-osc. output to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | "A" band 540 kc | L12 and L13 (2nd I-F trans.) |
| 2 | 1st Det. grid in series with .01 mfd. | | | L10 and L11 (1st I-F trans.) |
| 3 | A-Terminal in series with 47 mmfd. (link closed) | 15.2 mc | "C" band 15.2 mc | C8 (osc.)* C7 (ant.) |
| 4 | | 9.5 mc | "C" band 9.5 mc | C5 (ant.) (Rock gang) |
| 5 | | Repeat steps 3 and 4 | | |
| 6 | Yellow loop lead in series with 200 mmfd. (link closed) | 1,500 kc | "A" band 1,500 kc | C10 (osc.) |
| 7 | | 600 kc | "A" band 600 kc | L9 (osc.) |
| 8 | | Repeat steps 6 and 7 | | |
| 9 | Install and connect chassis in cabinet with antenna link closed. Tune in a radiated oscillator signal at 1,500 kc. and peak the "A" band trimmer C2 (on loop). Rock in L9 for peak output at 600 kc. | | | |

*Use minimum capacity peak if two peaks can be obtained. Oscillator tracks 455 kc. above signal on all bands.

Critical Lead Dress:

1. Bus from "C" oscillator coil to range switch must be held to length and dressed close to coil.
2. C30 (audio coupling capacitor to volume control) should be dressed close to front apron.
3. A.C. cord and motor leads must be dressed away from phono and F.M. jack.
4. Excess trans. leads to be dressed between trans. and rectifier socket.
5. Keep R5, C16 bus (in grid circuit of 6SA7 tube) as short as possible.
6. Dress C28 (in plate circuit of 1st A.F.) close to socket.
7. Keep R15 (grid resister) C34 (coupling capacitor of output tube) close to socket.
8. Keep C23 (tone compensating capacitor) close to back apron.
9. Keep R15, C48 (in tone compensating circuit) close to front apron.
10. Dress green lead from osc. coil to trimmer close to oscillator coil.
11. Dress cable from phono. socket to phono. switch up away from base.
12. Dress red A.C. leads away from I.F. trans. and 6SQ7 socket.
13. RF choke in plate of 6SG7 must be dressed toward back apron.






## CATHODE CURRENTS

| | | |
|---|---|---|
| (1) | 6SG7 | 10.5 MA. |
| (2) | 6SA7 | 9.9 MA. |
| (3) | 6SK7 | 16.0 MA. |
| (4) | 6SQ7 | 0.3 MA. |
| (5) | 6SQ7 | 0.3 MA. |
| (6) | 6K6GT | 22.0 MA. |
| (7) | 6K6GT | 22.0 MA. |
| (8) | TOTAL RECT | 81.0 MA. |

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

*Schematic for Model V-210*

P-92224
V210 (RC573A)

# V-209, V-210

### Use of GT (Glass) Tubes:

When using the glass equivalent for metal tubes in the above models, the following changes must be made to prevent oscillation with the push-buttons in the "out" position:

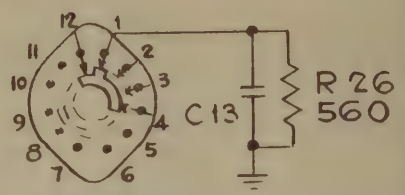
**6SA7GT glass tube in place of metal tube 6SA7:**

V-209—No changes required.

V-210—Add resistor R26, 560 ohms, ½ watt (RCA Stock No. 12414) in parallel with C13 capacitor, 2200 mmf., as shown in the accompanying sketch.

**6SK7GT glass tube in place of metal tube 6SK7:**

A shield (RCA Stock No. 39074) and a grounding clip (RCA Stock No. 39073) are required for shielding purposes




S4 (REAR) (V210)

*When Using 6SA7GT Glass Tube in Model V-210, add Resistor R26*

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **Model V-209 RC-573**<br>**Model V-210 RC-573A** |
| 36342 | Board—"Antenna-Ground" board |
| 37877 | Capacitor—Electrolytic—16 mfd., 450 volts |
| 37888 | Capacitor—Electrolytic—comprising 1 section of 15 mfd., 400 volts, 1 section of 10 mfd., 400 volts, and 1 section of 40 mfd., 25 volts |
| 38368 | Capacitor—Mica trimmer—50-350 mmfd. for "C" band antenna coil |
| 38801 | Capacitor—Mica trimmer—comprising 3 sections of 8-80 mmfd. each |
| 12723 | Capacitor—56 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 12724 | Capacitor—120 mmfd., moulded |
| 34700 | Capacitor—120 mmfd., unmoulded |
| 13003 | Capacitor—180 mmfd. |
| 38858 | Capacitor—220 mmfd. |
| 38831 | Capacitor—630 mmfd. |
| 44388 | Capacitor—2,200 mmfd. (for V-210) |
| 34459 | Capacitor—.0025 mfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 37706 | Capacitor—.025 mfd. |
| 4886 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 38783 | Coil—Antenna coil—"C" band |
| 38829 | Coil—Coil and resistor assembly—10,000 ohms |
| 38787 | Coil—Oscillator coil |
| 38800 | Condenser—Variable tuning condenser |
| 38404 | Control—Volume control and power switch |
| 32634 | Cord—Pointer cord (approx. 43-in. overall length) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 38359 | Cup—Oscillator coil mounting cup |
| 38790 | Drum—Drive drum |
| 35870 | Indicator—Station selector indicator |
| 36333 | Plate—Dial back plate complete with pulleys—less dial |
| 38832 | Plug—Pin plug for antenna loop leads |
| 30868 | Plug—2 contact female plug for motor cable |
| 36009 | Plug—2 prong male plug for loop cable (V-209) |
| 32641 | Plug—3 prong male plug for selector switch cable (V-210) |
| 5040 | Plug—4 contact female plug for speaker cable. |
| 32289 | Pulley—Drive cord pulley |
| 11565 | Resistor—15 ohms, ½ watt |
| 39344 | Resistor—270 ohms, 3 watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 30654 | Resistor—1,500 ohms, ½ watt |
| 35875 | Resistor—12,000 ohms, 3 watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30787 | Resistor—47,000 ohms, 1 watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14020 | Resistor—150,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 38803 | Shaft—Tuning knob shaft |
| 35772 | Shield—Bottom shield for transformer No. 35959 |
| 36656 | Shield—Top shield and core shield for transformer No. 35959 (Model V-209) |
| 35709 | Shield—Top shield for transformer No. 35959 (Model V-210) |
| 31364 | Socket—Dial lamp and compartment lamp socket |
| 33514 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for oscillator coil core and stud |
| 38804 | Switch—Range switch for Model V-209 |
| 38805 | Switch—Range switch for Model V-210 |
| 38802 | Switch—Tone control switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 35588 | Transformer—Power transformer—105-120 volts—25 cycle |
| 35959 | Transformer—Power transformer—105-120 volts—50/60 cycle—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |

| STOCK No. | DESCRIPTION |
|---|---|
| | **AUTOMATIC RECORD CHANGER** |
| | See separate Service Bulletin on RP158 Record Changer |
| | **SPEAKER ASSEMBLIES (RL, 70L-6)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil—1,060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4 prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 36671 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38376 | Bezel—Push button bezel—less buttons (V-210) |
| 36639 | Bracket—Lamp bracket for Model V-210 |
| 36461 | Button—Plug button for Model V-209 |
| 38375 | Button—Push button for Model V-210 |
| 38684 | Capacitor—Mica trimmer—2-20 mmfd. for Model V-209 |
| 36424 | Capacitor—Mica trimmer—comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd. 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. for Model V-210 |
| 36462 | Clamp—Dial clamp |
| 36002 | Coil—Loop primary coil for Model V-209 |
| 38579 | Coil—Loop primary coil for Model V-210 |
| 38315 | Coil—P.B. oscillator coil—high frequency—for Model V-210 |
| 37638 | Coil—P.B. oscillator coil—low frequency—for Model V-210 |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coil for Model V-210 |
| 36328 | Cover—Compartment lamp lead cover for Model V-209 |
| 39012 | Decalcomania—Control panel decal for Model V-209 |
| 39013 | Decalcomania—Control panel decal for Model V-210 |
| 36386 | Decalcomania—Trade mark decal (His Master's Voice) |
| 35467 | Decalcomania—Trade mark decal (RCA Victrola) |
| 39011 | Dial—Glass dial scale |
| 36327 | Escutcheon—Dial scale escutcheon—less dial |
| 30698 | Hinge—Cabinet lid hinge for Model V-209 |
| 38303 | Hinge—Door hinge for Model V-210 |
| 13103 | Jewel—Compartment lamp jewel |
| 35814 | Knob—Control knob |
| 5117 | Lamp—Compartment lamp |
| 11765 | Lamp—Dial lamp |
| 38806 | Loop—Antenna loop complete for Model V-209 |
| 38578 | Loop—Antenna loop complete for Model V-210 |
| 34317 | Marker—Station selector marker |
| 39563 | Mounting—Motorboard spring mounting (2 req.) |
| 38580 | Pivot—Loop support and pivot—on top of loop frame for Model V-209 |
| 37800 | Shade—Compartment lamp shade |
| 35999 | Socket—Antenna loop cable socket for Model V-209 |
| 36422 | Socket—Antenna loop and switch cable socket for Model V-210 |
| 38873 | Spring—Conical spring for Model V-210 |
| 35575 | Spring—Spring for lid support No. 36414—Model V-209 |
| 33083 | Spring—Spring for lid support No. 35381—Model V-209 |
| 37114 | Spring—Spring for lid support No. 37113—Model V-209 |
| 30900 | Spring—Retaining spring for knob |
| 34053 | Spring—Retaining spring for push buttons for Model V-210 |
| 36414 | Support—Lid support for V-209 using one section lid |
| 35831 | Support—L.H. lid support for V-209 using two section lid |
| 37113 | Support—R.H. lid support for V-209 using two section lid |
| 38581 | Support—Loop bracket and support—on bottom of loop frame for Model V-209 |
| 38575 | Switch—Selector switch for Model V-210 |

# MODEL 211K

## Chassis No. RC-571

## Eleven-Tube, Four-Band, AC, Superheterodyne

### Electrical and Mechanical Specifications

**Frequency Ranges**

| | |
|---|---|
| Broadcast "A" | 540-1,600 kc |
| Medium Wave "B" | 2.3-6.3 mc |
| Spread Band | 9.35-9.75 mc |
| Short Wave "C" | 11.7-15.4 mc |

Intermediate Frequency ..... 455 kc

**Push-Button Ranges**

| | |
|---|---|
| One station between approximately | 540-1,030 kc |
| Two stations between approximately | 610-1,250 kc |
| Two stations between approximately | 740-1,430 kc |
| One station between approximately | 880-1,600 kc |

**Tube Complement**

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Detector, A.V.C. |
| (5) RCA-6SQ7 | Audio |
| (6) RCA-6SQ7 | Phase Inverter |
| RCA-6K6GT (Four) | Power Output |
| (11) RCA-5U4-G | Rectifier |

**Power Output Rating**

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

**Loudspeaker (RL-70L-4)**

| | |
|---|---|
| Type | 12-inch Electrodynamic |
| V.C. Impedance | 2.2 ohms at 400 cycles |

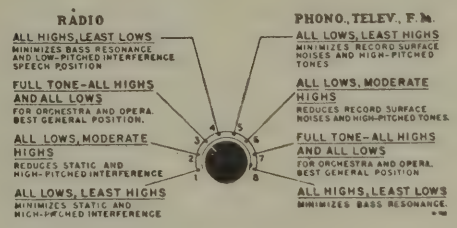
**Loudspeaker (RL-81B-6)**

| | |
|---|---|
| Type | 5-inch Permanent Magnet |
| V.C. Impedance | 3 ohms at 400 cycles |

**Power Supply Ratings**

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 140 watts |
| 105-125 volts, 25-60 cycles | 140 watts |

| | Height | Width | Depth |
|---|---|---|---|
| Cabinet Dimensions | 40 in. | 28 in. | 15 in. |
| Weight | (Net, 64 lbs.), (Shipping, 83 lbs.) | | |
| Tuning Drive Ratio | 15 to 1 | | |


RADIO
ALL HIGHS, LEAST LOWS
MINIMIZES BASS RESONANCE AND LOW-PITCHED INTERFERENCE. SPEECH POSITION
FULL TONE—ALL HIGHS AND ALL LOWS
FOR ORCHESTRA AND OPERA. BEST GENERAL POSITION.
ALL LOWS, MODERATE HIGHS
REDUCES STATIC AND HIGH-PITCHED INTERFERENCE
ALL LOWS, LEAST HIGHS
MINIMIZES STATIC AND HIGH-PITCHED INTERFERENCE
PHONO., TELEV., F.M.
ALL LOWS, LEAST HIGHS
MINIMIZES RECORD SURFACE NOISES AND HIGH-PITCHED TONES
ALL LOWS, MODERATE HIGHS
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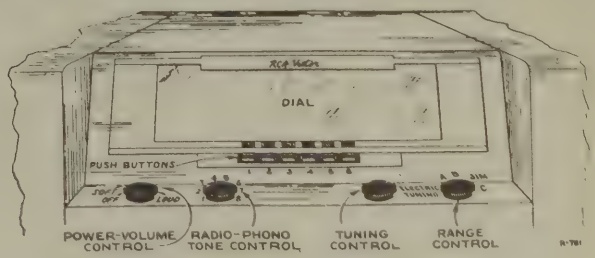



### Phasing Speakers

For correct tone, it is ESSENTIAL that the two speakers operate "in phase," so that the two cones move in and out together.

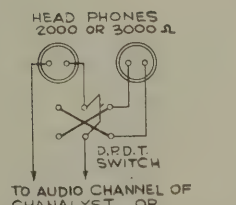
It is necessary to check the phasing whenever a new speaker, cone, field coil, or output transformer is installed, or whenever the speaker connections are altered in any way.

The recommended procedure is as follows:

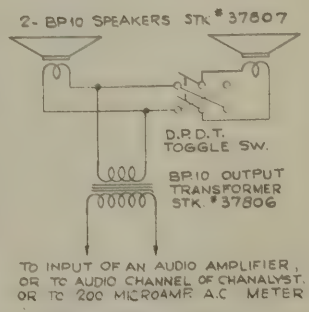
1. Hook up a "phase checker," using headphones or PM speaker units as shown. Connect the checker to an audio amplifier that has an output meter. (The audio channel in the Chanalyst is excellent for this purpose.)

2. Feed a 400-cycle modulated signal into the receiver. Turn volume up to medium. Hold both units of the checker in front of the large speaker in set. Throw the toggle switch to each position and note which position gives maximum output on meter. Mark this position of the switch "in phase." Mark the other position "out of phase."

3. Place one unit of the phase checker in front of each speaker in the set. Throw the toggle switch to each position and leave it at the position that gives greatest output on the meter. Note the switch marking for this position. If it says "in phase," the set speakers are correctly phased. If it says "out of phase," reverse the leads to the voice-coil terminals of the small speaker in the receiver.

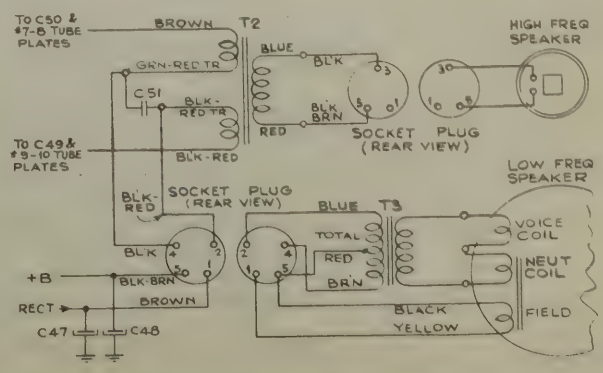



*"Phase Checker," using Headphones.*


2-BP10 SPEAKERS STK #37807
D.P.D.T. TOGGLE SW.
BP10 OUTPUT TRANSFORMER STK #37806
TO INPUT OF AN AUDIO AMPLIFIER, OR TO AUDIO CHANNEL OF CHANALYST, OR TO 200 MICROAMP. A.C. METER

*"Phase Checker," using small "PM" speakers.*

*Speaker Wiring Diagram.*



# Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.** — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

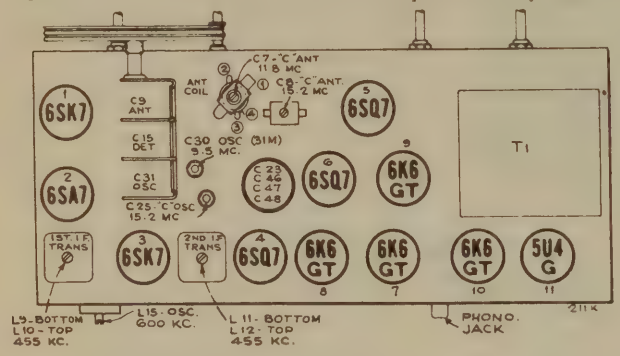
**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

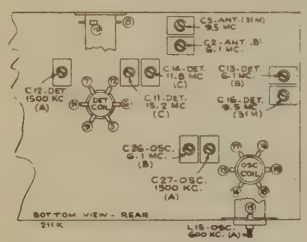
**Calibration for Alignment.—**

A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 140 degree scale mark is directly above condenser shaft when the gang is at minimum setting.

**Pointer for Calibration Scale.—**

Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to 0 degree mark on the calibration scale when the plates are fully meshed.

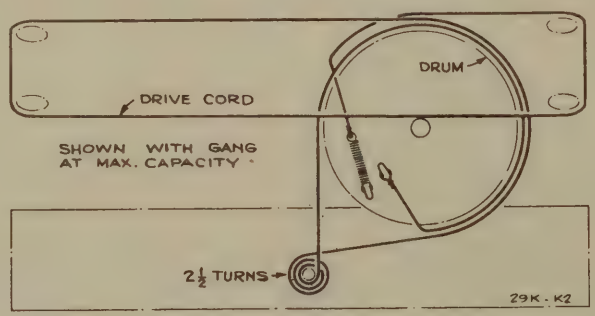


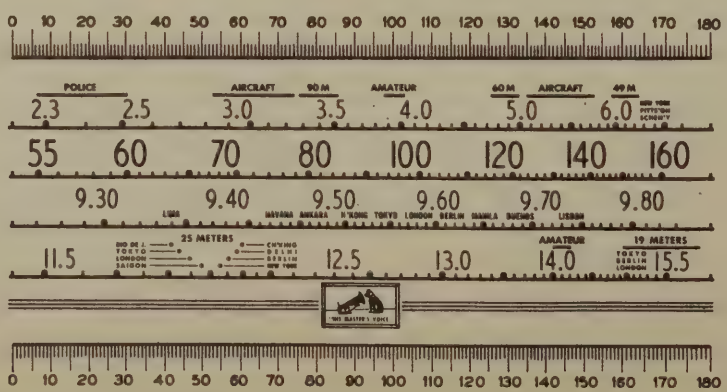



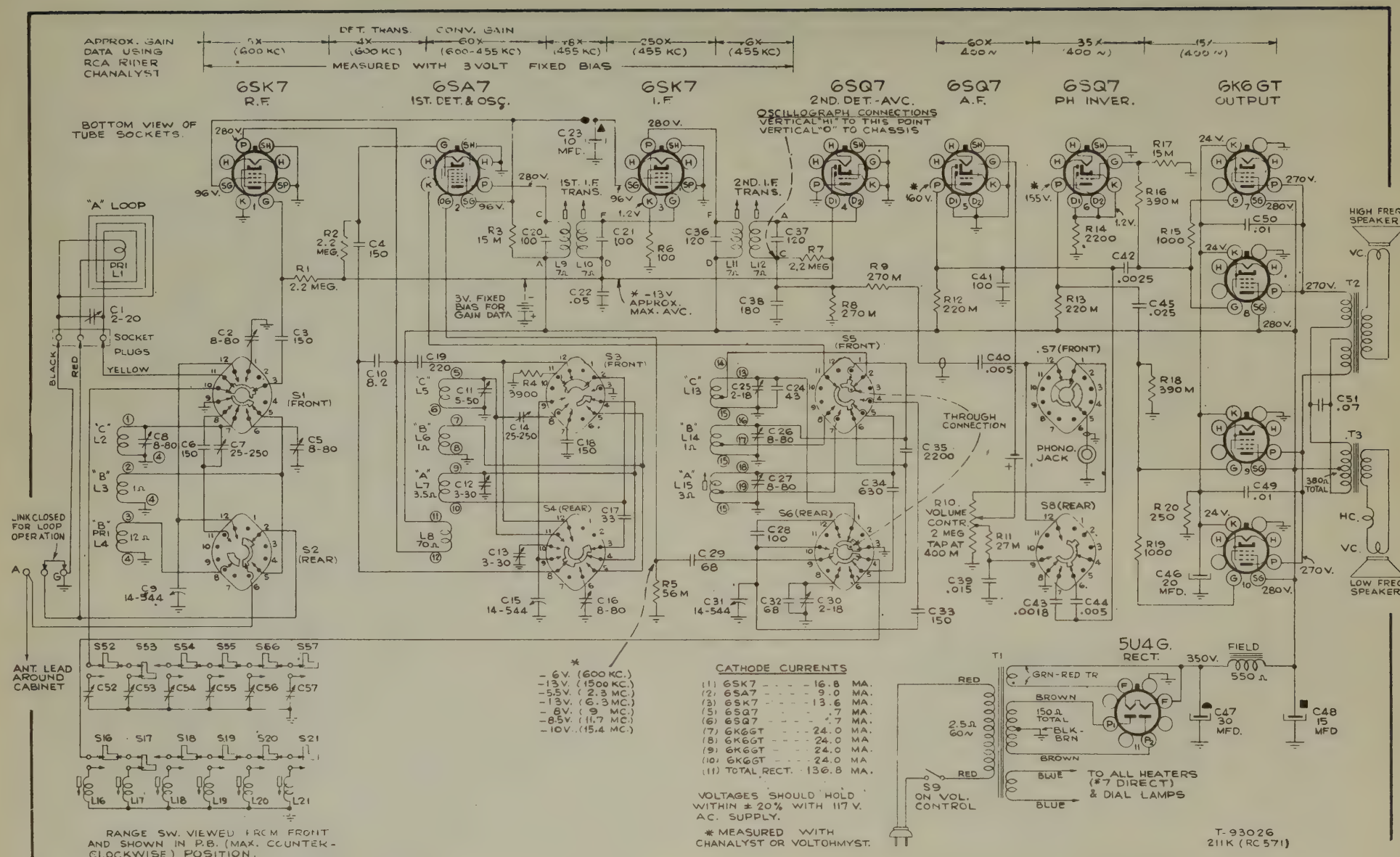

| Steps | Connect the high side of the test oscillator to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | Quiet Point on "A" Band | L-11 and L-12 (2nd I-F Trans.) |
| 2 | 1st Det. grid in series with .01 mfd. | | | L-9 and L-10 (1st I-F Trans.) |
| 3 | Yellow loop lead in series with 200 mmf. | 1,500 kc | 1,500 kc (160°) "A" Band | C-27 (osc.) C-12 (det.) |
| 4 | | 600 kc | 600 kc (30.5°) | L-15 (osc.) Rock |
| 5 | | Repeat steps 3 and 4. | | |
| 6 | Antenna terminal (A) in series with 47 mmfd. (link open) | 6,100 kc | 6,100 kc (161°) "B" Band | C-26 (osc.)* C-13 (det.) Rock C-2 (ant.) Gang |
| 7 | | 15.2 mc | 15.2 mc (165°) "C" Band | C-25 (osc.)* C-11 (det.) Rock C-8 (ant.) Gang |
| 8 | | 11.8 mc | 11.8 mc (52°) "C" Band | C-7 (ant.) C-14 (det.) Rock Gang |
| 9 | | Repeat steps 7 and 8. | | |
| 10 | | 9.5 mc | 9.5 mc (87.5°) 31M-Band | C-30 (osc.)* C-5 (ant.) Rock C-16 (det.) Gang |
| 11 | Fasten chassis in cabinet, close ant. link, adjust indicator to left-hand end of dial scales with gang closed. | | | |
| 12 | Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver | 1,500 kc | 1,500 kc signal "A" Band | C-1 (ant.) on loop |
| 13 | | 600 kc | 600 kc signal "A" Band | L-15 (osc.) Rock Gang |
| 14 | Repeat steps 12 and 13. | | | |

* Use minimum capacity peak if two peaks can be obtained.
**Note:** Oscillator tracks 455 kc above signal on all bands.

**External Antenna.**—When using an External Antenna, Peak C7 for max. output on a station in the 31-meter band.






* -6V. (600 KC.)
-13V. (1500 KC.)
-5.5V. ( 2.3 MC.)
-13V. ( 6.3 MC.)
- 8V. ( 9 MC.)
-8.5V. (11.7 MC.)
-10V. (15.4 MC.)

**CATHODE CURRENTS**

| | | |
|---|---|---|
| (1) | 6SK7 | 16.8 MA. |
| (2) | 6SA7 | 9.0 MA. |
| (3) | 6SK7 | 13.6 MA. |
| (5) | 6SQ7 | .7 MA. |
| (6) | 6SQ7 | .7 MA. |
| (7) | 6K6GT | 24.0 MA. |
| (8) | 6K6GT | 24.0 MA. |
| (9) | 6K6GT | 24.0 MA. |
| (10) | 6K6GT | 24.0 MA. |
| (11) | TOTAL RECT. | 136.8 MA. |

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. A.C. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

**Precautionary Lead Dress.—**

1. Dress all filament wiring away from output grids.
2. Leads from electrolytic to rectifier should be dressed so that all excess wire is at the socket side.
3. Speaker leads should be dressed down close to the chassis base and away from the phono plug.
4. Dress all excess power transformer leads between chassis and transformer down close to the chassis.
5. Dress pilot light leads under A.C. cord.
6. Dress audio grid lead from tone switch to No. 2 pin of 6SQ7 and bias cell away from diode lead.

## Push Button Adjustment

The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station.
4. After oscillator core is set correctly, adjust No. 1 antenna trimmer for maximum output.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On the 880 to 1,600 kc push-button, the higher frequency stations may be received with No. 1 oscillator core either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

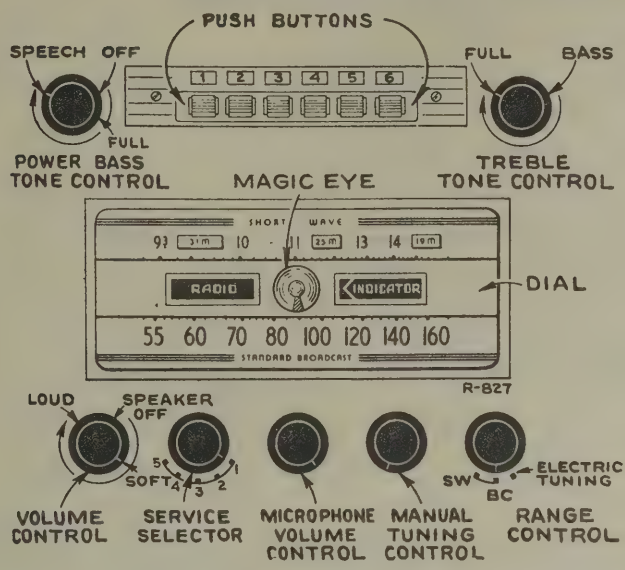
| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-571)** |
| 35966 | Board—"Antenna-Ground" board |
| 36045 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 450 volts, 1 section of 15 mfd., 450 volts, 1 section of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts |
| 38588 | Capacitor—Adjustable—25-200 mmfd. for "C" band antenna coil |
| 36051 | Capacitor—Air trimmer |
| 38591 | Capacitor—Mica trimmer comprising 1 section of 3-30 mmfd. and 1 section of 8-80 mmfd. |
| 38586 | Capacitor—Mica trimmer comprising 1 section of 3-30 mmfd., 1 section of 8-80 mmfd., and 1 section of 25-250 mmfd. |
| 38587 | Capacitor—Mica trimmer—8-80 mmfd. |
| 36169 | Capacitor—Mica trimmer comprising 2 sections of 8-80 mmfd. |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 13001 | Capacitor—8.2 mmfd. |
| 38868 | Capacitor—33 mmfd. |
| 38867 | Capacitor—43 mmfd. |
| 13057 | Capacitor—68 mmfd., moulded |
| 38866 | Capacitor—68 mmfd., silvered mica |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 38865 | Capacitor—100 mmfd., silvered mica |
| 34700 | Capacitor—120 mmfd. |
| 12725 | Capacitor—150 mmfd., moulded |
| 38864 | Capacitor—150 mmfd., silvered mica |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 38831 | Capacitor—630 mmfd. |
| 30882 | Capacitor—2200 mmfd. |
| 34506 | Capacitor—.0018 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 37706 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 14626 | Capacitor—.07 mfd. |
| 31581 | Cell—Bias cell |
| 38367 | Coil—Antenna coil—"C" band |
| 38358 | Coil—Oscillator coil |
| 38315 | Coil—P.B. oscillator coil—high frequency |
| 37638 | Coil—P.B. oscillator coil—low frequency |
| 38366 | Coil—R.F. coil |
| 38364 | Condenser—Variable tuning condenser |
| 38404 | Control—Volume control and power switch |
| 34662 | Cord—Drive cord (approx. 76-in. overall length) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 38359 | Cup—Mounting cup and bushing for oscillator coil |
| 38361 | Drum—Condenser drive drum |
| 31580 | Holder—Bias cell holder |
| 5119 | Plug—3-contact female plug for speaker cable |
| 5040 | Plug—4-contact female plug for speaker cable |
| 38832 | Plug—Pin plug for antenna loop leads |
| 31373 | Pulley—Drive cord pulley |
| 34765 | Resistor—100 ohms, ½ watt |
| 36096 | Resistor—250 ohms, 2 watt |
| 14720 | Resistor—1000 ohms, ½ watt |
| 34767 | Resistor—2200 ohms, ½ watt |
| 30694 | Resistor—3900 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 35595 | Resistor—15,000 ohms, 3 watt |
| 30409 | Resistor—27,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14583 | Resistor—220,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 38589 | Shaft—Tuning knob shaft |
| 31364 | Socket—Dial lamp socket |
| 35787 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for oscillator coil core and stud |
| 38574 | Support—L.H. pulley support complete with pulleys |
| 39148 | Support—R.H. pulley support complete with pulleys |
| 38575 | Switch—P.B. selector switch |
| 38590 | Switch—Range switch |
| 38576 | Switch—Tone switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 38585 | Transformer—Output transformer |
| 36164 | Transformer—Power transformer—105-120 volts, 25 cycle |
| 36044 | Transformer—Power transformer—105-120 volts, 50/60 cycle |
| 35969 | Washer—"C" washer for tuning knob shaft |
| | **SPEAKER ASSEMBLIES (E.M.) (RL-70-L4)** |
| 13867 | Cap—Dust cap |
| 36143 | Coil—Field coil—550 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 11953 | Plug—4-prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| 36144 | Transformer—Output transformer |
| | **SPEAKER ASSEMBLIES (P.M.) (RL-81-B6)** |
| 35849 | Cap—Dust cap |
| 38683 | Cone—Cone complete with voice coil |
| 5118 | Plug—3-prong male plug for speaker |
| | **MISCELLANEOUS ASSEMBLIES** |
| 38375 | Button—Push button |
| 38684 | Capacitor—Mica trimmer—2-20 mmfd. |
| 38584 | Channel—Rubber channel to hold dial |
| 38579 | Coil—Loop primary coil |
| 38749 | Decalcomania—Control panel decal |
| 38592 | Dial—Glass dial scale |
| 38582 | Escutcheon—Dial scale escutcheon |
| 38709 | Indicator—Station selector indicator |
| 35814 | Knob—Control knob |
| 11891 | Lamp—Dial lamp |
| 38578 | Loop—Antenna loop complete |
| 34317 | Marker—Station marker |
| 33774 | Mounting—Speaker mounting hardware for 12-in. speaker |
| 38580 | Pivot—Loop pivot located on top of loop frame |
| 38707 | Plate—Dial plate complete—less indicator pointer |
| 36422 | Socket—Loop cable socket located on loop |
| 34053 | Spring—Push button retaining spring |
| 30900 | Spring—Retaining spring for knob |
| 38581 | Swivel—Loop support and swivel located on bottom of loop frame |

# MODEL VHR-212

Chassis No. RC-574

## Home-Recording Radio-Phonograph Combination

*(Refer to RP-161 Service Note for Data on Automatic Mechanism)*



### Electrical and Mechanical Specifications

**Frequency Range**

| | |
|---|---|
| Broadcast "A" | 540-1600 kc |
| Short Wave "C" | 9,400-15,400 kc |
| Intermediate Frequency | 455 kc |

**Tube Complement**

| | |
|---|---|
| (1) RCA-6SG7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Det.—Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SJ7 | A-F Amplifier |
| (5) RCA-6Q7 | 2nd Det.—Phase Inverter |
| (6) RCA-6K6GT | Power Output |
| (7) RCA-6K6GT | Power Output |
| (8) RCA-6Q7 | Microphone Amplifier |
| (9) RCA-6U5-6G5 | Tuning and Recording Indicator |
| (10) RCA-5Y3G | Rectifier |

**Pilot Lamps**

| | |
|---|---|
| Dial | (2) Mazda No. 51, 6-8 V., 0.2 amps. |
| Indicator | Mazda No. 44, 6-8 V., 0.25 amps. |
| Compartment | Mazda No. 55, 6-8 V., 0.4 amps. |

**Power Output**

| | |
|---|---|
| Undistorted | 5 watts |
| Maximum | 5.5 watts |

**Record Changer (RP-161)**

| | |
|---|---|
| Record Capacity | Twelve 10-in., Ten 12-in. |
| Turntable Speed | 78 r.p.m. |
| Type Pickup | Crystal |

**Recorder (RMP-110)**

| | |
|---|---|
| Recording Head (Cutter) | Crystal |
| Turntable Speed | 78 r.p.m. |
| Recording Disc Diameter | Up to 10 inches |

**Loudspeaker (RL-70M-6)**

| | |
|---|---|
| Type | 12-inch electrodynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |

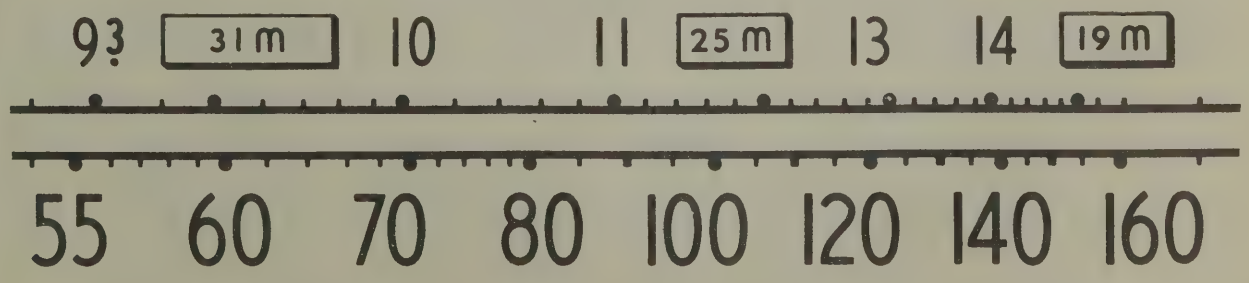
**Power Supply Rating**

105-125 volts, 60 cycles ..... 140 watts

Tuning Drive Ratio ..... 18-1

**Cabinet Dimensions**

| | |
|---|---|
| Height (inches) | 34 |
| Width (inches) | 33 7/8 |
| Depth (inches) | 17 3/8 |

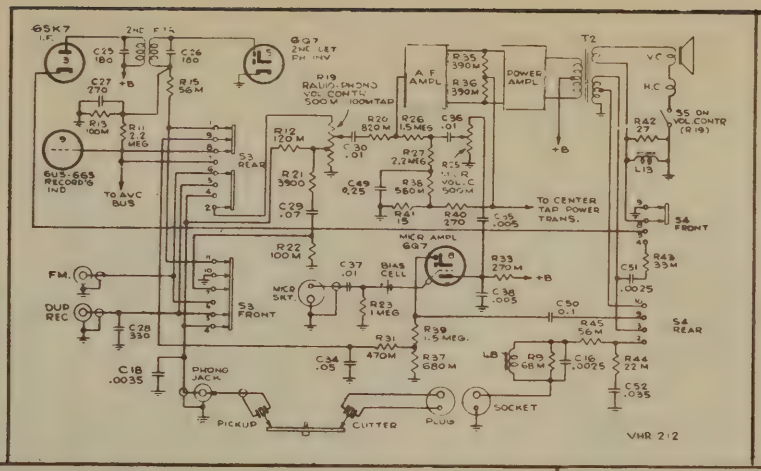



*The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.*

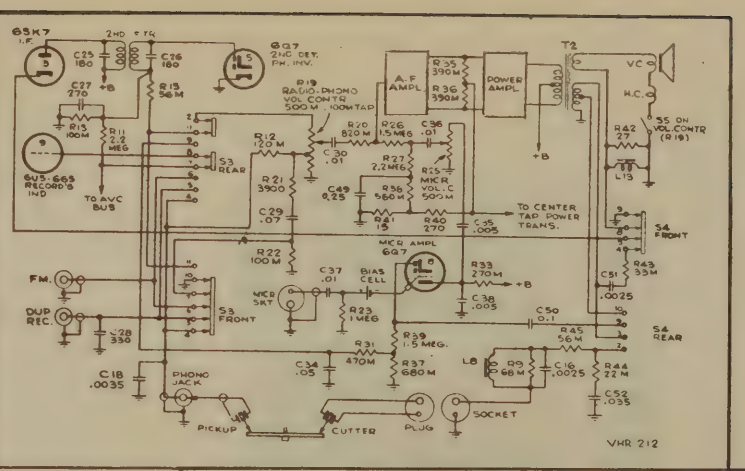
# Model VHR-212

## Service Selector Circuits

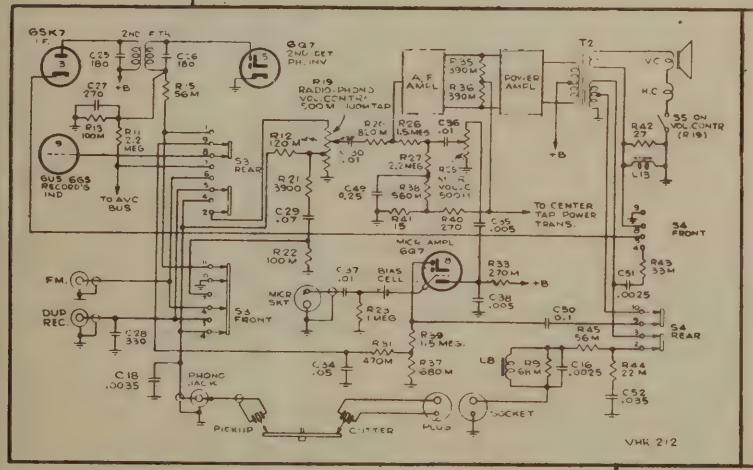
5. FM or Television




1. Radio




4. Recording




**F.M. OR TELEVISION**
1. F.M. OR TELEVISION PROGRAMS.
2. F.M. OR TELEVISION PROGRAMS MIXED WITH MICROPHONE.

**RADIO**
1. RADIO PROGRAMS.
2. RADIO PROGRAMS MIXED WITH VOICE OR MUSIC BY MICROPHONE.

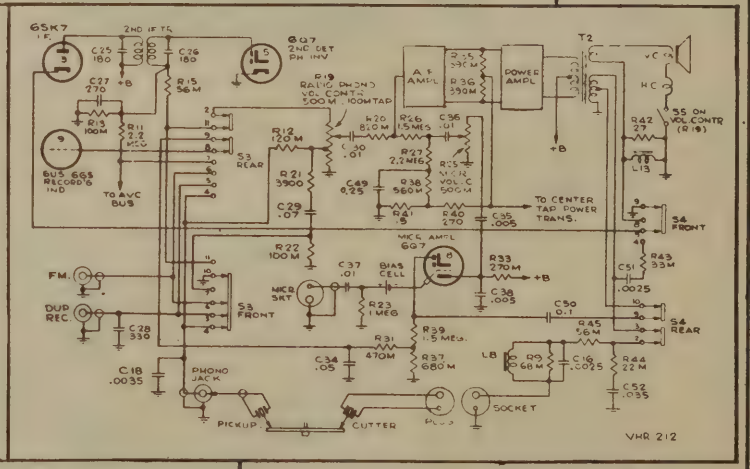
**RECORDING**
1. CUTTING RECORDS OF VOICE OR MUSIC THROUGH MICROPHONE.
2. CUTTING RECORDS OF PHONOGRAPH SELECTIONS USING AUX. TURNTABLE.
3. CUTTING RECORDS OF PHONOGRAPH SELECTIONS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.

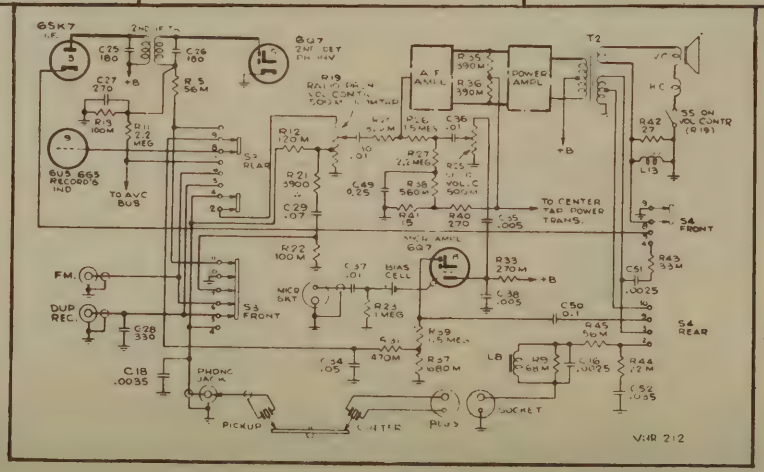
**RADIO RECORDING**
1. CUTTING RECORDS OF RADIO PROGRAMS.
2. CUTTING RECORDS OF RADIO PROGRAMS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.

**PHONOGRAPH**
1. PHONOGRAPH RECORD SELECTIONS.
2. PHONOGRAPH SELECTIONS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
3. MICROPHONE ONLY (P.A.).

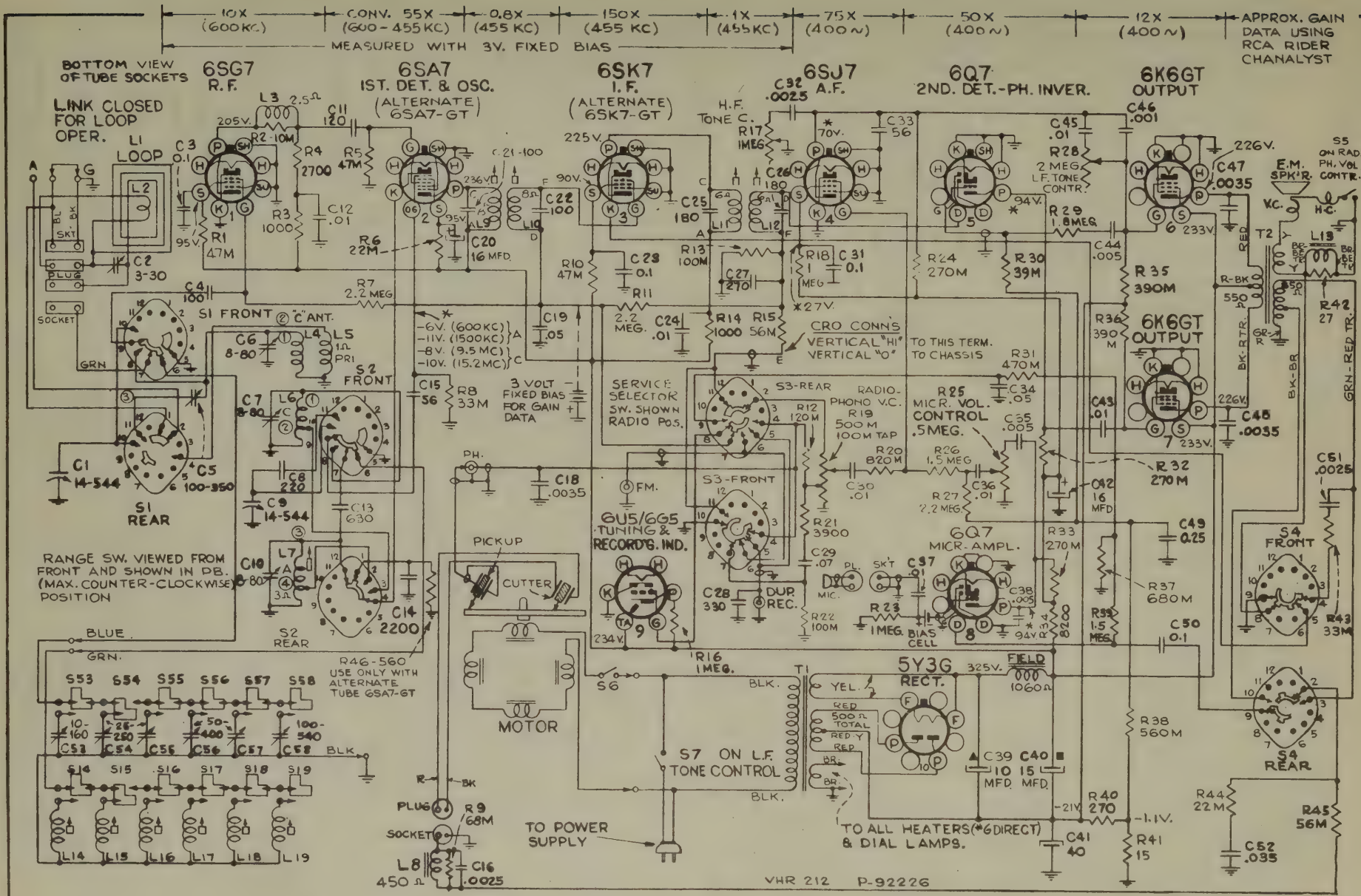
R-838

2. Radio Recording

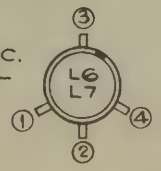



3. Phonograph




OSC. COIL




## CATHODE CURRENTS

| | | | |
|---|---|---|---|
| (1) 6SG7 | 10.9 MA. | (6) 6K6GT | 19.5 MA. |
| (2) 6SA7 | 10.9 MA. | (7) 6K6GT | 19.5 MA. |
| (3) 6SK7 | 13.4 MA. | (8) 6Q7 | 0.4 MA. |
| (4) 6SJ7 | 0.7 MA. | (9) 6U5/6G5 | 0.8 MA. |
| (5) 6Q7 | 0.5 MA. | (10) TOTAL RECT. | 77.0 MA. |

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

## Alignment Procedure

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.** — The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the scale printed in this service note can be used as an accurate and convenient substitute for the regular dial.

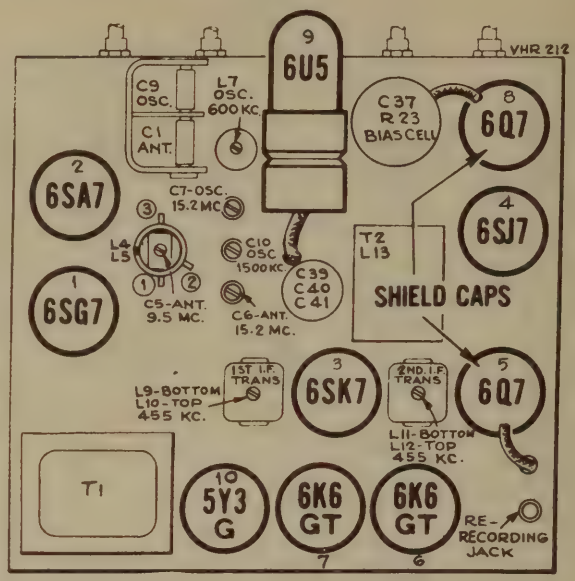
**Using Tuning Dial.—**

1. Remove glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the glass dial in place.

**"C" Band Reception.**—For best reception on "C" band with an outside antenna, adjust the trimmer screw on the RF coil on the chassis. Turn screw carefully with a special screwdriver (RCA Stock No. 31031) while the receiver is tuned to a station in the 31-meter band, and make setting for best reception. If returning to internal antenna, close the link on the center terminal and adjust "C" band antenna trimmer for best reception on 31-meter band.

| Steps | Connect test-osc. output to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | "A" band 540 kc | L11 and L12 (2nd I-F trans.) |
| 2 | 1st Det. grid in series with .01 mfd. | | | L9 and L10 (1st I-F trans.) |
| 3 | A-Terminal in series with 47 mmfd. (link closed) | 15.2 mc | "C" band 15.2 mc | C7 (osc.)* C8 (ant.) |
| 4 | | 9.5 mc | "C" band 9.5 mc | C5 (ant.) (Rock gang) |
| 5 | | Repeat steps 3 and 4 | | |
| 6 | Green loop lead in series with 200 mmfd. (link closed) | 1,500 kc | "A" band 1,500 kc | C10 (osc.) |
| 7 | | 600 kc | "A" band 600 kc | L7 (osc.) |
| 8 | | Repeat steps 6 and 7 | | |
| 9 | Install and connect chassis in cabinet with antenna link closed. Tune in a radiated oscillator signal at 1,500 kc. and peak the "A" band trimmer C2 (on loop). Rock in L7 for peak output at 600 kc. | | | |

*Use minimum capacity peak if two peaks can be obtained. Oscillator tracks 455 kc. above signal on all bands.




**Critical Lead Dress:**

1. Bus from "C" band oscillator trimmer C7 to coil should be dressed away from coil and other leads.
2. Yellow lead from oscillator coil to range switch should be dressed over coil terminals and away from other leads.
3. Red, green, and black oscillator coil leads should be dressed clear of each other and all other leads and parts.
4. "A" band tracking capacitor C13 should be dressed up and away from the coil and tuning shaft.
5. The green and blue push-button leads should be dressed clear of all other leads.
6. The grid leads to gang should be dressed away from all other leads and parts.
7. A.C. cord and motor lead should be dressed up and away from phono. and F.M. jack.
8. All excess power transformer leads should be dressed down towards chassis and back towards transformer.
9. Phono. cable should be dressed up away from tube sockets and service switch.
10. Dress cable from re-recording jack up and against end chassis apron.
11. Yellow lead at terminal No. 5 of 6Q7 amplifier should be dressed up and back towards pin No. 8.
12. Red lead to pin No. 6 of 6Q7 amplifier should be dressed against chassis.
13. Coupling capacitor C11 (120 mmfd.) should be dressed toward end apron.
14. R.F. coupling capacitor C4 (100 mmfd.) should be dressed away from terminal board on end apron.
15. R.F. plate choke should be dressed back and close to end shield away from C11 (120 mmfd.) capacitor.
16. All excess speaker leads should be dressed against chassis under phono. shield plate.
17. All leads and parts to cutter choke should be dressed away from phono. cable.
18. The .01 mfd. C43 capacitor from the plate of the 6Q7 to grid of 6K6GT should be dressed down against chassis.
19. The .0035 mfd. C47, C48 plate by-pass capacitors at 6K6GT sockets should be dressed against chassis.

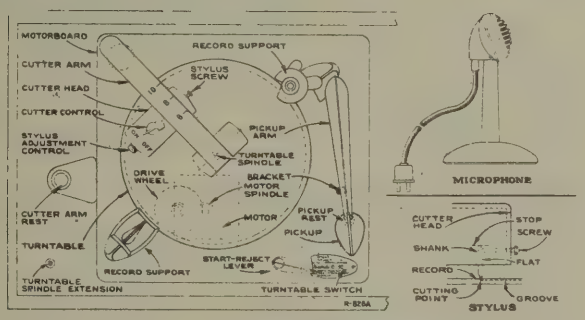
## Push Button Adjustments

The push buttons connect to separate magnetite-core oscillator coils and separate ant. circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast position and manually tune in the first station on the list.
3. Turn range switch to push-button position and press in the left-hand button.
4. Adjust No. 1 oscillator core to receive the first station. To secure the best adjustment, rotate the Loop Antenna for least pickup, and adjust core for peak output.
5. Adjust No. 1 antenna trimmer capacitor for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining stations.

**NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**




## REPLACEMENT PARTS AUTOMATIC RECORD CHANGER REFER TO RP-161 PAGE 737C

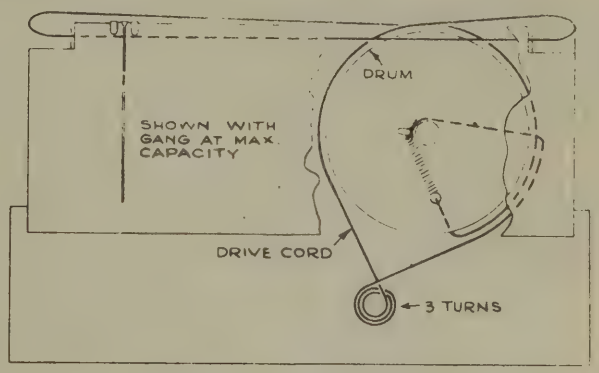
## Television

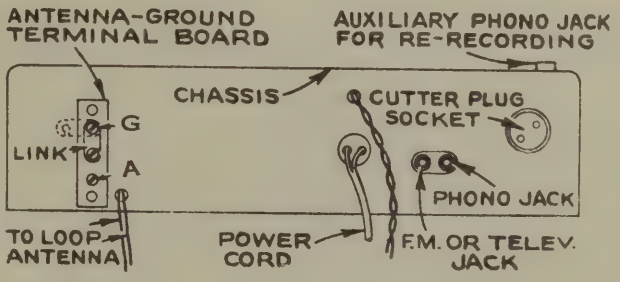
In areas where Television Broadcasts are available, a Television Attachment will reproduce the picture while the receiver reproduces the sound. The pin plug on the Attachment cord plugs into the jack on the apron of the receiver chassis. For Television operation, turn the Service Selector to "F-M Tel." A proper Television Antenna is essential.

## Frequency Modulation

In areas where Frequency Modulation (F-M) Broadcasts are available, a Frequency Modulation Attachment will permit reception on this newly developed short wave system. The pin plug on the Attachment cord plugs into the jack on the apron of the receiver chassis. For F-M operation, turn the Service Selector to "F-M Tel." A proper antenna is essential.

On the 880 to 1,600 kc push-button, the higher frequency stations may be received with osc. core either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.




*Alternate Glass Tubes*

*When using a 6SK7-GT glass tube in place of the metal tube 6SK7, a shield (Stock No. 39074) and a clip (Stock No. 39073) are required for shielding purposes. When using a 6SA7-GT glass tube in place of the metal tube 6SA7, a 560 ohm, ¼ watt resistor (Stock No. 12414) must be added in parallel with C-14 capacitor 2200 mmf. to prevent oscillation with push buttons in out position.*

## RECORDER OPERATING INSTRUCTIONS

Refer to Record Operating Instructions in Model VHR-202 Service note, taking note of these exceptions:

The position numbering is reversed

| | MODEL VHR-212 | | VHR-202 | |
|---|---|---|---|---|
| RADIO | Pos. | 1 | Pos. | 4 |
| RADIO RECORDING | " | 2 | " | 3 |
| PHONOGRAPH | " | 3 | " | 2 |
| RECORDING | " | 4 | " | 1 |
| FM or TELEVISION | " | 5 | Omitted | |

The spindle extension of VHR-212 is removed and the free end of the cutter arm is seated on the turntable spindle.

Recording is controlled by the "cutter control" which raises or lowers the cutting stylus to the cutting position.

Turn cutter control to "ON" to begin recording. Turn cutter control to "OFF" to stop recording. The recording may be "played-back" immediately without moving the cutter arm.

# Replacement Parts—Model VHR-212

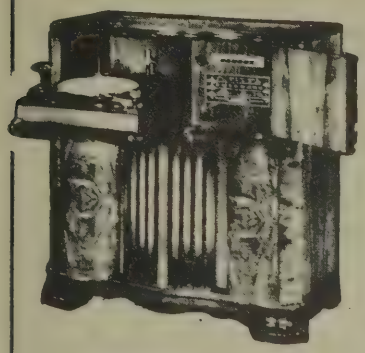
Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-574)** |
| 39172 | Arm—Adjusting arm for service selector switch |
| 36342 | Board—"Antenna-Ground" board |
| 30766 | Cap—Rubber cap for tuning tube |
| 37877 | Capacitor—Electrolytic—16 mfd., 450 volts |
| 37888 | Capacitor—Electrolytic comprising 1 section of 15 mfd., 400 volts, 1 section of 10 mfd., 400 volts, and 1 section of 40 mfd., 25 volts |
| 38368 | Capacitor—Adjustable—50-350 mmfd. |
| 38801 | Capacitor—Mica trimmer comprising 3 sections of 8-80 mmfd. each |
| 12723 | Capacitor—56 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 12724 | Capacitor—120 mmfd. |
| 14712 | Capacitor—180 mmfd. |
| 38858 | Capacitor—220 mmfd. |
| 12488 | Capacitor—270 mmfd. |
| 12952 | Capacitor—330 mmfd. |
| 38831 | Capacitor—630 mmfd. |
| 44338 | Capacitor—2,200 mmfd. |
| 37102 | Capacitor—.001 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 5196 | Capacitor—.035 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 14626 | Capacitor—.07 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 31581 | Cell—Bias cell |
| 39073 | Clip—Tube shield clip |
| 34285 | Clip—Tuning tube clip |
| 38788 | Coil—Antenna coil—"C" band |
| 37064 | Coil—Choke coil |
| 38829 | Coil—Coil and resistor—10,000 ohms |
| 38787 | Coil—Oscillator coil |
| 38800 | Condenser—Variable tuning condenser |
| 38409 | Control—Microphone volume control |
| 39171 | Control—Radio volume control and switch |
| 34662 | Cord—Drive cord (approx. 43-in. overall lgth.) |
| 12006 | Core—Adjustable core and stud for I.F. transformers |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 38359 | Cup—Oscillator coil mounting cup |
| 38790 | Drum—Drive drum |
| 31580 | Holder—Bias cell holder |
| 35870 | Indicator—Station selector indicator |
| 37017 | Plate—Dial back plate complete—less pulleys, tuning tube clip, and "Indicator" screen |
| 11824 | Plug—2 contact female plug for microphone cable—less shell |
| 30868 | Plug—2 contact female plug for motor cable |
| 36009 | Plug—2 prong male plug for loop cable |
| 31572 | Plug—3 contact female plug for power switch cable |
| 32641 | Plug—3 prong male plug for selector switch cable |
| 5040 | Plug—4 contact female plug for speaker cable |
| 39153 | Plug—4 prong male plug for tone control cable |
| 32289 | Pulley—Drive cord pulley |
| 33514 | Receptacle—Phonograph and television socket |
| 11565 | Resistor—15 ohms, ½ watt |
| 39389 | Resistor—27 ohms, 1 watt |
| 36692 | Resistor—270 ohms, 3 watt |
| 12414 | Resistor—560 ohms, ½ watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 14024 | Resistor—2,700 ohms, ½ watt |
| 30694 | Resistor—3,900 ohms, ½ watt |
| 14250 | Resistor—8,200 ohms, ½ watt |
| 30736 | Resistor—22,000 ohms, 1 watt |
| 19081 | Resistor—22,000 ohms, 2 watt |
| 12454 | Resistor—33,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30787 | Resistor—47,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14138 | Resistor—68,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 13734 | Resistor—120,000 ohms, ½ watt |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 30648 | Resistor—470,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 30562 | Resistor—680,000 ohms, ½ watt |
| 30963 | Resistor—820,000 ohms, ½ watt |
| 30652 | Resistor—1 meg., ½ watt |
| 12201 | Resistor—1.5 meg., ½ watt |
| 11769 | Resistor—1.8 meg., ½ watt |
| 30649 | Resistor—2.2 meg., ½ watt |
| 37018 | Screen—"Indicator" screen |
| 39175 | Screen—Service indicator screen |
| 14350 | Screw—Square head set screw for arm No. 39172 |
| 38803 | Shaft—Tuning knob shaft |
| 39074 | Shield—Tube shield |
| 38324 | Sleeve—Rubber sleeve for arm No. 39172 |
| 39173 | Slider—Indicator slider complete—less screen |
| 31364 | Socket—Dial lamp or compartment lamp socket |
| 35787 | Socket—Phono input socket |
| 33165 | Socket—Recorder head socket |
| 31251 | Socket—Tube socket |
| 34864 | Socket—Tuning tube socket |
| 31418 | Spring—Drive cord spring |
| 38805 | Switch—Range switch |
| 39174 | Switch—Service selector switch |
| 35636 | Transformer—First I.F. transformer |
| 37065 | Transformer—Second I.F. transformer |
| 39328 | Transformer—Output transformer |
| 35959 | Transformer—Power transformer—105-120 volts, 50/60 cycle—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **MICROPHONE ASSEMBLIES** |
| 39330 | Base—Microphone base only |
| 37033 | Cable—Microphone cable (12 ft.) complete—less plug |
| 39331 | Cover—Front cover and screw |
| 39332 | Crystal—Microphone crystal and holder encased in sponge rubber ring |
| 39334 | Handle—Microphone handle (wood)—less base and housing |
| 39333 | Housing—Crystal housing |
| 14793 | Plug—2 prong male plug for microphone cable |
| 5042 | Screw—No. 8-32 x ¼-in. cup point set screw |
| | **SPEAKER ASSEMBLIES (RL-70M-6)** |
| 13867 | Cap—Dust cap |
| 12079 | Coil—Field coil—1,060 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 5039 | Plug—4 prong male plug for speaker |
| 36146 | Suspension—Metal cone suspension |
| | **MISCELLANEOUS ASSEMBLIES** |
| X1214 | Baffle—Baffle board and grille cloth |
| 36461 | Button—Plug button |
| 38375 | Button—Push button |
| 38684 | Capacitor—Mica trimmer—2-20 mmfd. |
| 36424 | Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 36462 | Clamp—Dial clamp |
| 36002 | Coil—Loop primary coil |
| 38315 | Coil—P.B. oscillator coil—high frequencies |
| 37638 | Coil—P.B. oscillator coil—low frequencies |
| 38405 | Control—H.F. tone control |
| 38402 | Control—L.F. tone control and power switch |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 36328 | Cover—Compartment lamp lead cover |
| 39472 | Decalcomania—Control panel decal |
| 37148 | Decalcomania—"Power-Base" decal |
| 36386 | Decalcomania—Trade mark decal (His Master's Voice) |
| 35467 | Decalcomania—Trade mark decal (RCA Victrola) |
| 37147 | Decalcomania—"Treble" decal |
| 39471 | Dial—Glass dial scale |
| 36327 | Escutcheon—Dial scale escutcheon—less dial |
| 38376 | Escutcheon—Push button escutcheon—less buttons |
| 39352 | Hinge—Cabinet door hinge |
| 30698 | Hinge—Cabinet lid hinge |
| 13103 | Jewel—Pilot lamp cap |
| 35814 | Knob—Control knob |
| 5117 | Lamp—Compartment lamp |
| 11765 | Lamp—Dial lamp |
| 11891 | Lamp—Indicator lamp |
| 38806 | Loop—Antenna loop complete |
| 34317 | Marker—Station call letter markers |
| 39563 | Mounting—Spring mounting hardware for motorboard (2 required) |
| 38580 | Pivot—Pivot and support located on top of loop frame |
| 31567 | Plug—3 prong male plug for power switch cable |
| 37800 | Shade—Compartment lamp shade |
| 35999 | Socket—2 contact female socket for loop leads |
| 36422 | Socket—3 contact female socket for selector switch cable |
| 38853 | Socket—4 contact female socket for tone control cable |
| 34053 | Spring—Retaining spring for buttons |
| 30900 | Spring—Retaining spring for knobs |
| 33083 | Spring—Spring for lid support No. 35831 |
| 35575 | Spring—Spring for lid support No. 36414 |
| 37114 | Spring—Spring for lid support No. 37113 |
| 36414 | Support—Cabinet lid support for production using 1 section lid |
| 35831 | Support—L.H. lid support for production using 2 section lid |
| 37113 | Support—R.H. lid support for production using 2 section lid |
| 38581 | Support—Support and bracket—located on bottom of loop frame |
| 38575 | Switch—P.B. selector switch |

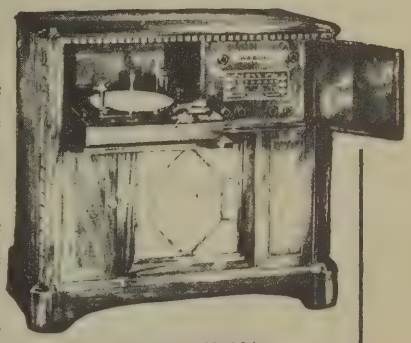
# MODELS V-215, V-219, V-221, V-225

**Chassis No. RC-564 RC-564A RC-564 RC-564B**

## Nine-Tube, Three-Band, AC, Superheterodyne Receivers and Phonographs

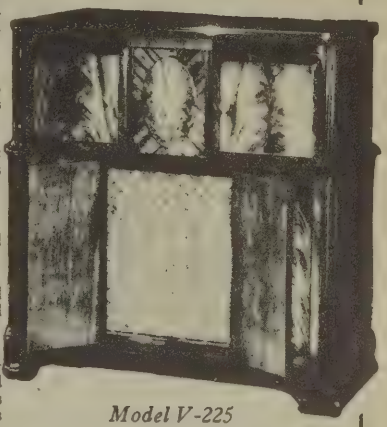


*Model V-215*



*Model V-221*

*Model V-219*



*Model V-225*

## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Standard Broadcast (A) | 540-1,600 kc |
| Medium Wave (B) | 2,300-6,300 kc |
| Short Wave (C) | 9,400-15,400 kc |
| Intermediate Frequency | 455 kc |

ELECTRIC TUNING

No. of Stations

| | |
|---|---|
| 1 | 540-1,030 kc |
| 2 | 610-1,250 kc |
| 2 | 740-1,430 kc |
| 1 | 880-1,600 kc |

TUBE COMPLEMENT

| | |
|---|---|
| (1) RCA-6SG7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector—Oscillator |
| (3) RCA-6SK7 | I-F Amplifier |
| (4) RCA-6SQ7 | 2nd Det., A-F, A.V.C. |
| (5) RCA-6SQ7 | Phase Inverter |
| (6) RCA-6F6G | Power Output |
| (7) RCA-6F6G | Power Output |
| (8) RCA-6R7 | Pre. Amplifier |
| (9) RCA-5U4G | Rectifier |

POWER OUTPUT RATING

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

LOUDSPEAKER

| | |
|---|---|
| Type | 12-inch electrodynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |
| Identification Number | (RL-70-M2) |

POWER SUPPLY RATINGS (V-219, V-225)

105-125 volts, 50-60 cycles ..... 145 watts total

POWER SUPPLY RATING (V-215, V-221)

| | |
|---|---|
| 105-125 volts, 50-60 cycles | 145 watts total |
| 105-125 volts, 25 cycles | 145 watts total |

AUTOMATIC PHONOGRAPH RP-160 for V-215, RP-160A for V-219, RP-160B for V-221

| | |
|---|---|
| Type Pickup | Crystal |
| Record Capacity | Twelve 10-in., Ten 12-in. records |
| Power Consumption 160 | 17 watts |
| Power Consumption 160A | 14 watts |

AUTOMATIC PHONOGRAPH RP-151 for V-225

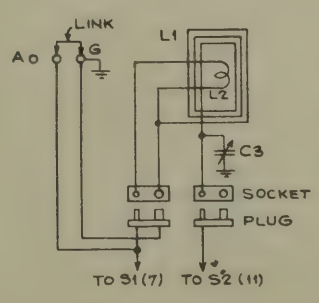
| | |
|---|---|
| Type Pickups | (2) Crystal |
| Record Capacity | Fifteen 10-in or Twelve 12-in. |
| Power consumption turntable drive motor | (14) watts |
| Power consumption -cycle motor | (38) watts |

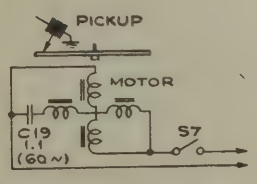
| CABINET DIMENSIONS (inches) | Height | Width | Depth |
|---|---|---|---|
| V-215 | 35⅜ | 35 | 16½ |
| V-219 | 34 | 35 | 19 |
| V-221 | 36 | 38 | 17¾ |
| V-225 | 41⅜ | 40⅜ | 19½ |

| | | | |
|---|---|---|---|
| Chassis Base Dimensions (inches) | 3 | 11¼ | 10½ |
| Over-all Chassis Height (inches) | | | 7 |

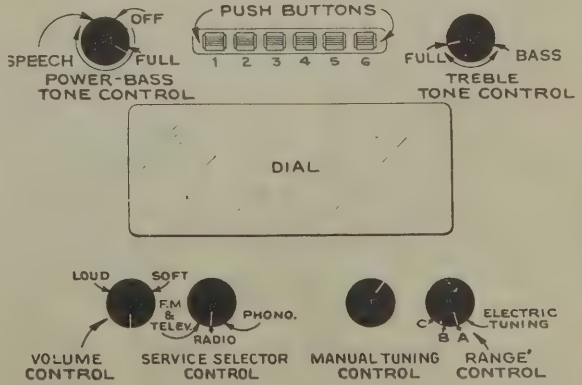
| WEIGHT (lbs.) | Net | Shipping |
|---|---|---|
| V-215 | 100 | 120 |
| V-219 | 102 | 125 |
| V-221 | 112 | 133 |
| V-225 | 156 | 198 |
| Tuning Drive Ratio | | 18-1 |

**For Information on Automatic Mechanism, Refer to Service Notes on RP-160 for V-215, RP-160A for V-219, RP-160B for V-221, and RP-151 for V-225**



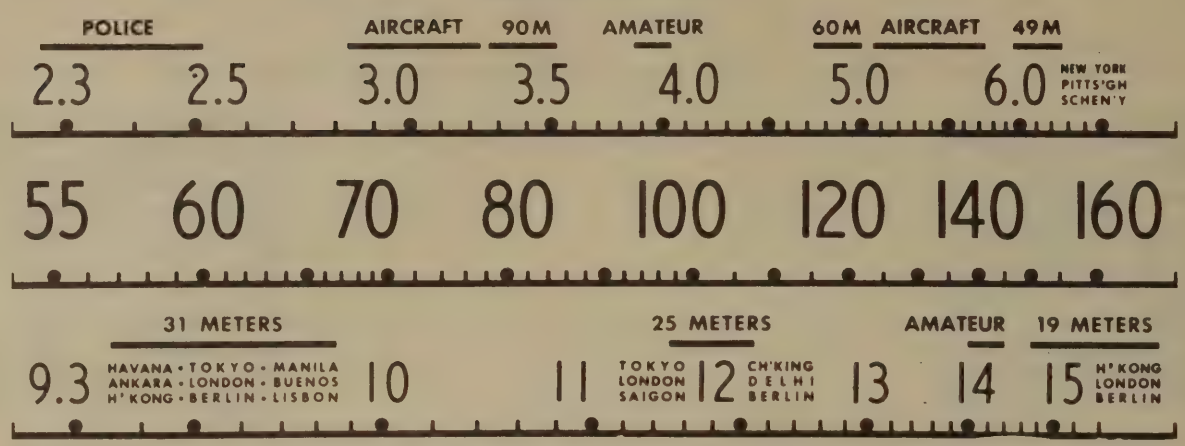

LOOP AND PHONO. MOTOR CONN'S V 219 (RC564A)




**External Antenna.**—For best reception on "C" band with an external antenna, peak the trimmer on "C" antenna coil for maximum output on a station in the 31-meter band.

*For all Models*

## Alignment Procedure




*The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.*

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the full size calibration scale printed in this service note can be used as an accurate and convenient substitute for the regular dial.

**Using Tuning Dial.—**

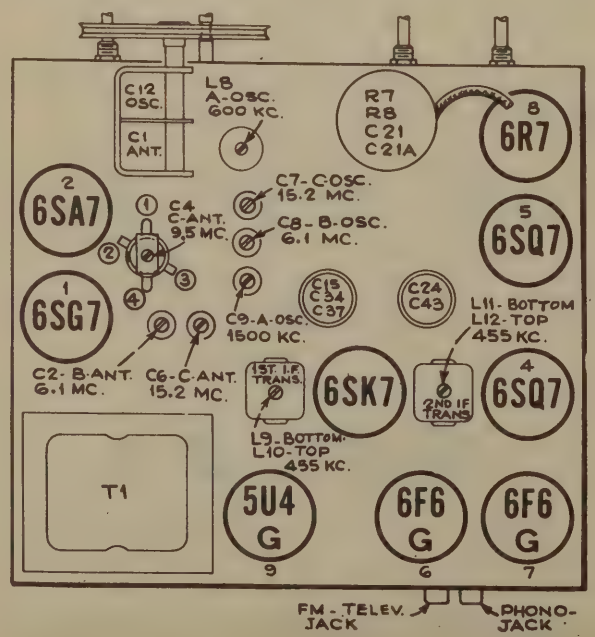
1. Remove the dial glass from the cabinet.
2. With gang at full mesh move the pointer to a point (1/16) inch to the left of the reference mark at the left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in place.

**Using Dial Scale Printed In This Service Note.—**

Follow the procedure above, substituting the dial scale printed in this service note for the glass dial in the cabinet.

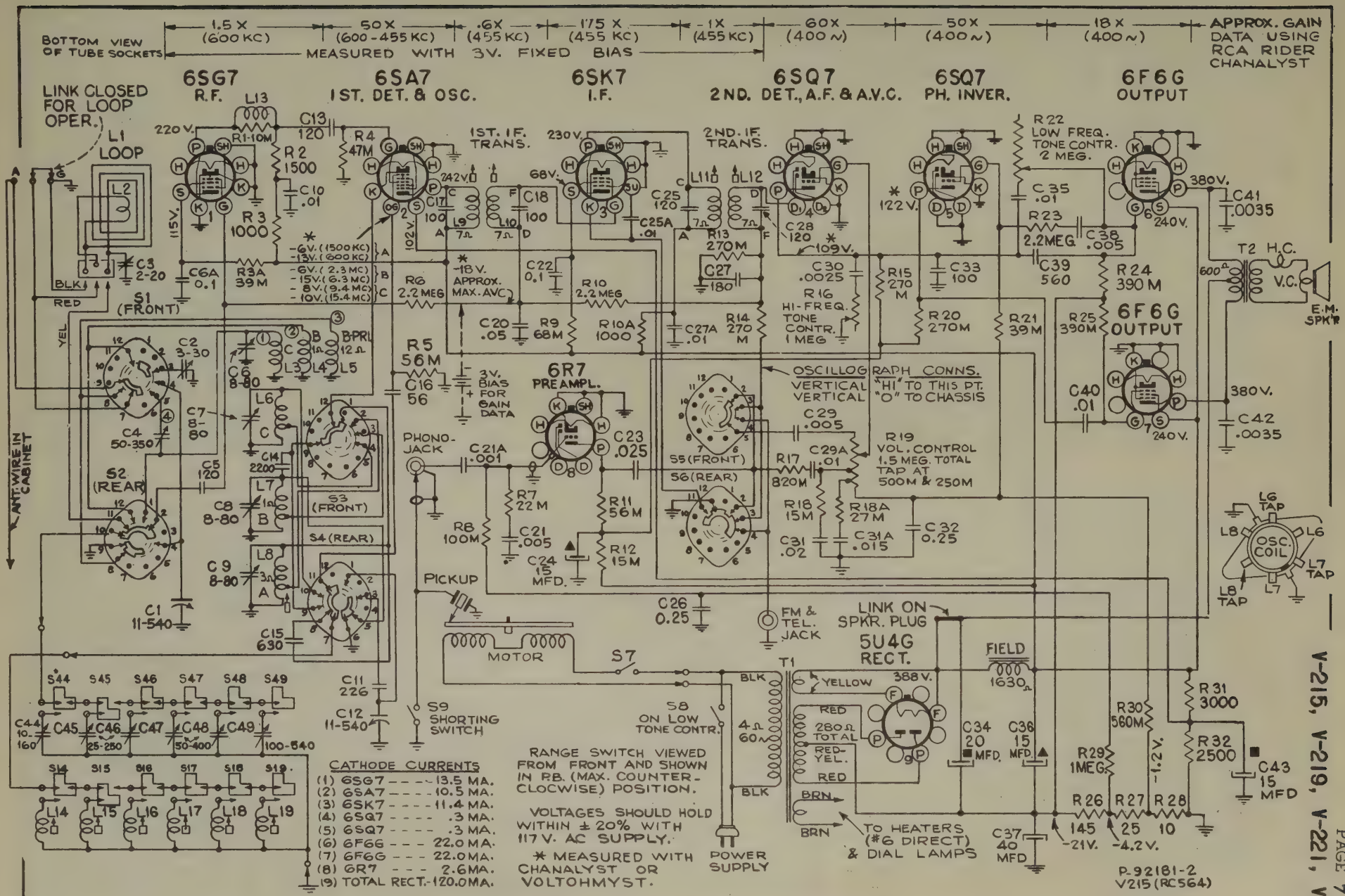
| Steps | Connect high side of test osc. to— | Tune test osc. to— | Turn radio dial to— | Adjust the following for maximum peak output— |
|---|---|---|---|---|
| 1 | I-F grid in series with .01 mfd. | 455 kc | "A" Band 540 kc | L12, L11 (2nd I-F Trans.) |
| 2 | 1st Det. grid in series with .01 mfd. | | | L10, L9 (1st I-F Trans.) |
| 3 | Yellow loop lead in series with 200 mmf. (link closed) | 1,500 kc | "A" Band 1,500 kc | C9 (osc.) |
| 4 | | 600 kc | "A" Band 600 kc | L8 (osc.) |
| 5 | | Repeat steps 3 and 4 | | |
| 6 | Ant. terminal in series with 47 mmf. (link closed) | 6.1 mc | "B" Band 6.1 mc | C8 (osc.)* C2 (ant.) |
| 7 | | 15.2 mc | "C" Band 15.2 mc | C7 (osc.)* C6 (ant.) |
| 8 | | 9.5 mc | "C" Band 9.5 mc | C4 (ant.) |
| 9 | | Repeat steps 7 and 8 | | |
| 10 | Install and connect chassis in cabinet, with link closed. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band ant. trimmer C3 (on loop). Rock in L8 for peak output at 600 kc. | | | |

* Use minimum capacity peak if two peaks can be obtained.
Oscillator tracks 455 kc above signal on all bands.




**Critical Lead Dress**

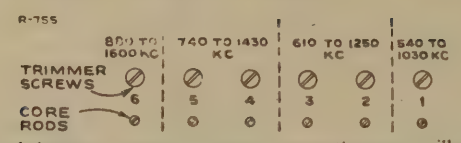
1. Push button, R.F. and oscillator leads should be separated as much as possible to reduce degeneration on push button reception.
2. R.F. choke in plate circuit of 6SG7 should be dressed towards the back apron.
3. Dress green push button lead under clamp and away from "C" band series capacitor.
4. Dress heater leads away from grids and diodes.
5. Dress phono. cables up and away from all wiring.
6. Dress all excess leads from transformer towards back towards transformer.
7. Keep output plate leads short and dressed close to chassis.
8. Dress green lead from 6SA7 screen to electrolytic down close to chassis.
9. Dress "C" band coil lead from oscillator coil to range switch down towards green lead.
10. Keep yellow loop lead clear of all wiring.
11. Dress ground bus of large electrolytic away from mounting lug.
12. Remove all excess slack from pilot light assembly and dress it close to chassis base away from volume control.
13. Dress oscillator grid capacitor (56 mmfd.) up and away from the screen and plate of 6SA7 socket.
14. A-C leads to "off-on" switch should be kept away from tone control cable to reduce hum.
15. Peaking coil should be dressed away from R-F grid resistor to reduce degeneration in R-F stage.
16. Dress oscillator push button lead in weld clamp on front apron away from 220 mmf. series condenser.
17. Keep all leads away from Phono.-FM jack to prevent audio oscillation and hum. Dress underneath the shield provided.


BOTTOM VIEW OF TUBE SOCKETS
1.5 X (600 KC)
50 X (600-455 KC)
.6X (455 KC)
1.75 X (455 KC)
1 X (455 KC)
MEASURED WITH 3V. FIXED BIAS
60 X (400 ~)
50 X (400 ~)
18 X (400 ~)
APPROX. GAIN DATA USING RCA RIDER CHANALYST
6SG7 R.F.
6SA7 1ST. DET. & OSC.
6SK7 I.F.
6SQ7 2ND. DET., A.F. & A.V.C.
6SQ7 PH. INVER.
6F6G OUTPUT
LINK CLOSED FOR LOOP OPER.
L1 LOOP
L2
S1 (FRONT)
S2 (REAR)
S3 (FRONT)
S4 (REAR)
ANT. WIRE IN CABINET
1ST. I.F. TRANS.
2ND. I.F. TRANS.
6R7 PREAMPL.
PHONO JACK
PICKUP
MOTOR
S7
S8 ON LOW TONE CONTR.
S9 SHORTING SWITCH
FM & TEL. JACK
LINK ON SPKR. PLUG
5U4G RECT.
FIELD 1630Ω
T1
T2 H.C.
V.C.
E.M. SPKR
OSCILLOGRAPH CONNS.
"HI" TO THIS PT.
"O" TO CHASSIS
R19 VOL. CONTROL 1.5 MEG. TOTAL TAP AT 500M & 250M
R22 LOW FREQ. TONE CONTR. 2 MEG.
R16 HI-FREQ. TONE CONTR. 1 MEG
3V. BIAS FOR GAIN DATA
-18V. APPROX. MAX. AVC
OSC COIL
L6 TAP
L7 TAP
L8 TAP
POWER SUPPLY
TO HEATERS (#6 DIRECT) & DIAL LAMPS
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN R.B. (MAX. COUNTER-CLOCWISE) POSITION.
VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC SUPPLY.
* MEASURED WITH CHANALYST OR VOLTOHMYST.
CATHODE CURRENTS
(1) 6SG7 - - - - 13.5 MA.
(2) 6SA7 - - - - 10.5 MA.
(3) 6SK7 - - - - 11.4 MA.
(4) 6SQ7 - - - - .3 MA.
(5) 6SQ7 - - - - .3 MA.
(6) 6F6G - - - 22.0 MA.
(7) 6F6G - - - 22.0 MA.
(8) 6R7 - - - 2.6 MA.
(9) TOTAL RECT.-120.0 MA.
P-92181-2
V215 (RC564)

*In Model V-219, the loop and phono motor connections are different, as shown in separate diagram on a following page. In Model V-225, R-8 is 220,000 ohms, R-17 is 1.8 Meg., and C-21 is .0035 mfd.*

# V-215, V-219, V-221, V-225

## Push Button Adjustment




The push buttons connect to separate magnetite-core oscillator coils and separate loop circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

The procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.

2. Turn the range switch to the broadcast position and manually tune in the first station on the list.

3. Turn range switch to push-button position and press in the left-hand button.

4. Adjust core rod No. 1 to receive the first station. To secure the best adjustment, rotate the loop for least pickup, and adjust core rod No. 1 for peak output.

5. Adjust trimmer screw No. 1 for peak output on the first station.

6. Proceed in the same manner to adjust for the remaining stations.

7. Repeat adjustments for best results.

On the 880 to 1,600 kc push-button, the higher frequency stations may be received with core rod No. 6 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies

## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** (RC-564 V-215) (RC-564A V-219) (RC-564B V-225) (RC-564 V-221) |
| 36342 | Board—"Antenna-Ground" board |
| 34889 | Capacitor—Electrolytic comprising 2 sections of 15 mfd., 450 volts each |
| 37888 | Capacitor—Electrolytic comprising 1 section of 20 mfd., 450 volts, 1 section of 15 mfd., 350 volts, and 1 section of 40 mfd., 25 volts |
| 38852 | Capacitor—Mica trimmer—2 sections of 8-80 mmfd. |
| 38801 | Capacitor—Mica trimmer—3 sections of 8-80 mmfd. |
| 38368 | Capacitor—Mica trimmer—50-350 mmfd. for "C" band antenna coil |
| 12723 | Capacitor—56 mmfd. |
| 12720 | Capacitor—100 mmfd., moulded |
| 34699 | Capacitor—100 mmfd., unmoulded |
| 12724 | Capacitor—120 mmfd., moulded |
| 34700 | Capacitor—120 mmfd., unmoulded |
| 13003 | Capacitor—180 mmfd |
| 38830 | Capacitor—226 mmfd. |
| 12537 | Capacitor—560 mmfd. (for V-215 and V-221) |
| 38831 | Capacitor—630 mmfd. |
| 44338 | Capacitor—2,200 mmfd. |
| 37102 | Capacitor—.001 mfd. (for V-215, V-219 and V-221) |
| 34459 | Capacitor—.0025 mfd. |
| 30303 | Capacitor—.0035 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 36248 | Capacitor—.02 mfd. |
| 37706 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—.25 mfd. |
| 38367 | Coil—Antenna coil—"C" band |
| 38358 | Coil—Oscillator coil |
| 35876 | Coil—Peaking coil and resistor—10,000 ohms |
| 38800 | Condenser—Variable tuning condenser |
| 36447 | Control—Volume control |
| 32634 | Cord—Drive cord (approx. 43" overall length) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 38359 | Cup—Oscillator coil mounting cup |
| 38790 | Drum—Drive drum |
| 35870 | Indicator—Station selector indicator |
| 36333 | Plate—Dial back plate complete with pulleys—less dial |
| 38832 | Plug—Pin plug for antenna loop leads for Model V-215 and V-221 |
| 30868 | Plug—2 contact female plug for motor cable |
| 36009 | Plug—2 prong male plug for antenna loop cables for Model V-219 |
| 31572 | Plug—3 contact female plug for power switch cable |
| 32641 | Plug—3 prong male plug for selector switch cable |
| 39153 | Plug—4 prong male plug for tone control cable |
| 12493 | Plug—5 contact female plug for speaker cable |
| 32289 | Pulley—Drive cord pulley |
| 38808 | Resistor—Voltage divider |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 36714 | Resistor—15,000 ohms, ½ watt |
| 30492 | Resistor—22,000 ohms, ½ watt |
| 30409 | Resistor—27,000 ohms, ½ watt |
| 12266 | Resistor—39,000 ohms, ½ watt |
| 30434 | Resistor—39,000 ohms, 1 watt |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 14138 | Resistor—68,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt (for V-215, V-219 and V-221) |
| 14583 | Resistor—220,000 ohms, ½ watt (for V-225) |
| 30651 | Resistor—270,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 30161 | Resistor—820,000 ohms, ½ watt (for V-215, V-219 and V-221) |
| 30652 | Resistor—1 meg., ½ watt |
| 11769 | Resistor—1.8 meg., ½ watt (for V-225) |
| 30649 | Resistor—2.2 meg., ½ watt |
| 38803 | Shaft—Tuning knob shaft |
| 36059 | Shield—Bottom shield for transformer No. 34539 |
| 36058 | Shield—Top shield for power transformer No. 34539 for Models V-215, V-225 and V-221 |
| 36661 | Shield—Top shield for power transformer No. 34539 for Model V-219 |
| 31364 | Socket—Dial lamp socket for V-215, V-219, V-221 and V-225 or compartment lamp socket for V-219, or indicator lamp socket for V-215, V-221 |
| 33514 | Socket—Phono input socket |
| 31251 | Socket—Tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for oscillator coil core and stud |
| 38809 | Switch—"Radio-Phono" control switch |
| 38807 | Switch—Range switch |
| 35636 | Transformer—First I.F. transformer |
| 35790 | Transformer—Second I.F. transformer |
| 39353 | Transformer—Power transformer—105/120 volts, 25 cycle for Model V-215 and V-221 |
| 34539 | Transformer—Power transformer—105/120 volts, 50/60 cycle—less end shields |
| 35969 | Washer—"C" washer for tuning shaft |
| | **AUTOMATIC RECORD CHANGER** |
| | **MODEL V-215** See separate Service Bulletin RP-160 Record Changer |
| | **MODEL V-221** See Separate Service Bulletin RP-160-B Record Changer |
| | **MODEL V-219** See separate Service Bulletin RP-160-A Record Changer |
| | **MODEL V-225** See separate Service Bulletin RP-151 Record Changer |
| | **SPEAKER ASSEMBLIES** (RL-70M-2) |
| 13867 | Cap—Dust cap |
| 36331 | Coil—Field coil—1,630 ohms |
| 11469 | Coil—Neutralizing coil |
| 36145 | Cone—Cone complete with voice coil |
| 31539 | Plug—5 prong male speaker plug |
| 36146 | Suspension—Metal cone suspension |
| 33444 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36639 | Bracket—Lamp bracket for V-215, V-225, V-221 |
| 39364 | Bracket—Roller bracket—L.H.—less rollers for V-215, V-221 |
| 39363 | Bracket—Roller bracket—R.H.—less rollers for V-215, V-221 |
| 36461 | Button—Plug button for V-219 |
| 38375 | Button—Push button |
| 38684 | Capacitor—Mica trimmer—2-20 mmfd. |
| 36424 | Capacitor—Mica trimmer—comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd. |
| 36462 | Clamp—Dial clamp |
| 38579 | Coil—Loop primary coil for V-215, V-225, V-221 |
| 36002 | Coil—Loop primary coil for V-219 |
| 38315 | Coil—P.B. oscillator coil—high frequency |
| 37638 | Coil—P.B. oscillator coil—low frequency |
| 38405 | Control—H.F. tone control |
| 38402 | Control—L.F. tone control and power switch |

| STOCK No. | DESCRIPTION |
|---|---|
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 36328 | Cover—Compartment lamp lead cover for V-219 |
| 39369 | Cushion—Rubber - shock - absorbing cushion for V-215, V-221 |
| 39015 | Decalcomania—Control panel decal |
| 37148 | Decalcomania—"Power-Bass" decal |
| 36386 | Decalcomania—Trade mark decal (His Master's Voice) for V-219, V-225, V-221 |
| 35467 | Decalcomania—Trade mark decal (RCA Victrola) |
| 37147 | Decalcomania—Treble tone decal |
| 39014 | Dial—Glass dial scale |
| 36327 | Escutcheon—Dial escutcheon—less dial |
| 38376 | Escutcheon—Push button escutcheon—less buttons |
| 39373 | Extension—Actuating hinge trip extension—less trip |
| 39362 | Glide—Adjustable glide for V-215, V-221 |
| 39368 | Guide—Roller guide—L.H.—for V-215, V-221. |
| 39367 | Guide—Roller guide—R.H.—for V-215, V-221. |
| 39372 | Hinge—Actuating hinge—less extension and trip for V-215 and V-221 |
| 39357 | Hinge—Cabinet door hinge (1 set) for V-219 (Fruitwood) |
| 4585 | Hinge—L.H. bottom door hinges (1 set) for V-221 |
| 39354 | Hinge—Cabinet door hinge (1 set) for V-219 (Mahogany and Walnut) and V-225 |
| 39355 | Hinge—Cabinet lid hinge—L.H.—for V-219 (Fruitwood) |
| 39356 | Hinge—Cabinet lid hinge—R.H.—for V-219 (Fruitwood) |
| 36608 | Hinge—Cabinet lid hinge—L.H.—for V-219 (Mahogany and Walnut) |
| 36609 | Hinge—Cabinet lid hinge—R.H.—for V-219 (Mahogany and Walnut) |
| 37934 | Hinge—Radio compartment door hinge for V-215 and V-221 (1 set) |
| 38303 | Hinge—Record changer compartment door hinge for V-215 and V-221 |
| 13103 | Jewel—Pilot lamp cap |
| 39371 | Keeper—Mechanism tray latch keeper V-215 and V-221 |
| 35814 | Knob—Control knob |
| 5117 | Lamp—Compartment lamp for V-219 |
| 36728 | Lamp—Compartment lamp for V-225 |
| 11765 | Lamp—Dial lamp |
| 39370 | Latch—Mechanism tray latch V-215 and V-221. |
| 38578 | Loop—Antenna loop complete for V-215, V-225 and V-221 |
| 38806 | Loop—Antenna loop complete for V-219 |
| 34317 | Marker—Station selector marker |
| 39563 | Mounting—Motorboard spring mounting for V-215, V-219, V-221 (2 required) |
| 39084 | Mounting—Motorboard mounting hardware consisting of a top and a bottom spring bolt and lockwasher (4 required) for V-225 |
| 38580 | Pivot—Antenna loop pivot—located on top of loop frame |
| 30870 | Plug—2 prong male plug for compartment lamp cable assembly for V-225 |
| 31567 | Plug—3 prong male plug for switch and coil assembly cable |
| 39361 | Pull—Door pull for V-215 |
| 36413 | Pull—Door pull for V-219 |
| 36818 | Pull—Door pull for V-221 |
| 39486 | Pull—Door pull for V-225 |
| 39365 | Roller—Mechanism tray roller—less tire—for V-215 and V-221 |
| 37800 | Shade—Compartment lamp shade for V-219 |
| 37887 | Shade—Lamp shade for V-225 |
| 36422 | Socket—Antenna loop cable socket for V-215, V-221 and V-225, and 3 contact female socket located on selector switch and coil assembly |
| 35999 | Socket—Antenna loop cable socket for V-219 |
| 19026 | Socket—Compartment lamp socket for V-225 |
| 31364 | Socket—Indicator lamp socket for V-225 |
| 38853 | Socket—4 contact female socket located on selector switch and coil assembly |
| 30536 | Spring—Cabinet lid support spring for Stk. No. 34793 and No. 39359 |
| 33083 | Spring—Cabinet lid support spring for Stk. No. 35830 and No. 39358 |
| 39375 | Spring—Latch trip spring V-215 and V-221 |
| 30900 | Spring—Retaining spring for knob |
| 34053 | Spring—Retaining spring for push button |
| 39376 | Stop—Mechanism tray stop V-215 and V-221. |
| 38581 | Support—Antenna loop support—located on bottom of loop frame |
| 39359 | Support—Cabinet lid support—L.H.—for V-219 (Fruitwood) |
| 39358 | Support—Cabinet lid support—R.H.—for V-219 (Fruitwood) |
| 34793 | Support—Cabinet lid support—L.H.—for V-219 (Mahogany and Walnut) |
| 35830 | Support—Cabinet lid support—R.H.—for V-219 (Mahogany and Walnut) |
| 39360 | Support—Drop support for record changer compartment door for V-215 and V-221 |
| 35039 | Switch—Compartment lamp switch for V-225. |
| 38575 | Switch—P.B. selector switch |
| 39366 | Tire—Rubber tire for tray roller for V-215, V-221 |
| X1207 | Tray—Record changer mechanism tray—mahogany—for V-215 |
| X1206 | Tray—Record changer mechanism tray—walnut—for V-215 |
| X1229 | Tray—Record changer mechanism tray—walnut—for V-221 |
| X1230 | Tray—Record changer mechanism tray—Mahogany—for V-221 |
| 39374 | Trip—Mechanism tray latch trip, V-215 and V-221 |
| 2917 | Washer—"C" washer to hold roller to bracket for V-215 and V-221 |

## RECORD CHANGER SLIDE MECHANISM

### (Models V-215, V-221)

An adjustment is located on each of the rear legs so that the angle of the cabinet may be adjusted to allow the record changer to slide out easily. Adjust so that the changer rolls out of the cabinet to a gradual stop at the front edge of the opened door.

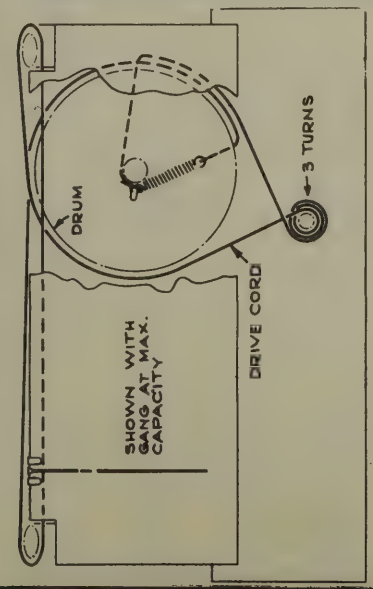
Removing Mechanism

(a) Unplug the power cord and pickup cord.

(b) Reach in behind the motor board and lift up the two metal tabs which act as stops and prevent the record changer from sliding out.

(c) Loosen the cable clamp holding the two cables in place.

(d) Pull the record changer out of the instrument.




## V-215, V-221

### Speaker RL-70N-6:

On 2nd Production of V-215 and V-221, the speaker is changed from RL-70M-2 to RL-70N-6. The replacement parts are identical.

### Use of GT (Glass) Tubes:

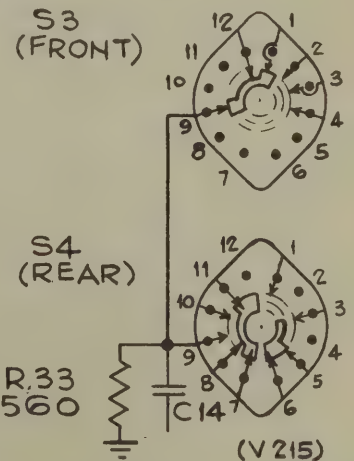
When using the glass equivalent for metal tubes in the above models, the following changes must be made to prevent oscillation with the push-buttons in the "out" position:

**6SA7GT glass tube in place of metal tube 6SA7:**

V-215, V-219, V-221, V-225—Add resistor R33, 560 ohms, ½ watt (RCA Stock No. 12414) from terminal 9 of switch S4 (Rear) to chassis ground as shown in the accompanying sketch.

**6SK7GT glass tube in place of metal tube 6SK7:**

A shield (RCA Stock No. 39074) and a grounding clip (RCA Stock No. 39073) are required for shielding purposes on all models above.




*When Using 6SA7GT Glass Tube in Models V-215, V-219, V-221, V-225, add Resistor R33*

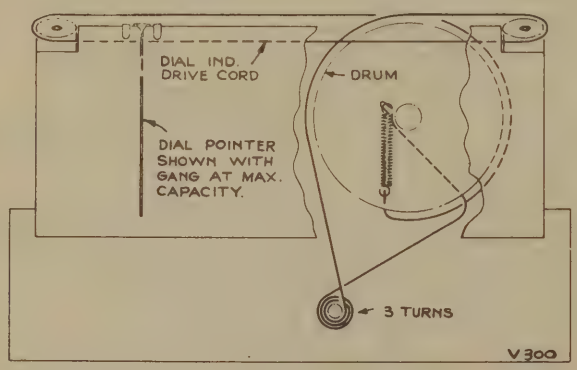
# MODELS V-300, V-301, V-302

Chassis No. RC-518, RC-518A, R-518A

## Ten-Tube, Plus Magic Eye, Three-Band, AC, Combinations

*Model V-300*

*Model V-301*



*Model V-302*

## Electrical and Mechanical Specifications

**FREQUENCY RANGES**

| | |
|---|---|
| Broadcast "A" | 540-1,600 kc |
| Medium Wave "B" | 1.55-4.0 mc |
| Short Wave "C" | 5.8-18.0 mc |
| SPREAD BAND | 9.34-9.86 mc |

INTERMEDIATE FREQUENCY ..... 455 kc

**TUBE COMPLEMENT**

| | |
|---|---|
| (1) RCA-6SK7 | R-F Amplifier |
| (2) RCA-6SA7 | 1st Detector-Oscillator |
| (3) RCA-6SK7 | 1st I-F Amplifier |
| (4) RCA-6SK7 | 2nd I-F Amplifier |
| (5) RCA-6H6 | 2nd Detector, A.V.C. |
| (6) RCA-6J5 | Audio Amplifier |
| (7) RCA-6F6-G | Driver |
| (8) RCA-6F6-G | Power Output |
| (9) RCA-6F6-G | Power Output |
| (10) RCA-6U5 | Magic Eye |
| (11) RCA-5U4-G | Rectifier |

**POWER OUTPUT RATING**

| | |
|---|---|
| Undistorted | 18 watts |
| Maximum | 20 watts |

**LOUDSPEAKER (RL-94-1)**

| | |
|---|---|
| Type | 15-inch Electrodynamic |
| V.C. Impedance | 7.2 ohms at 400 cycles |

**PHONOGRAPH**

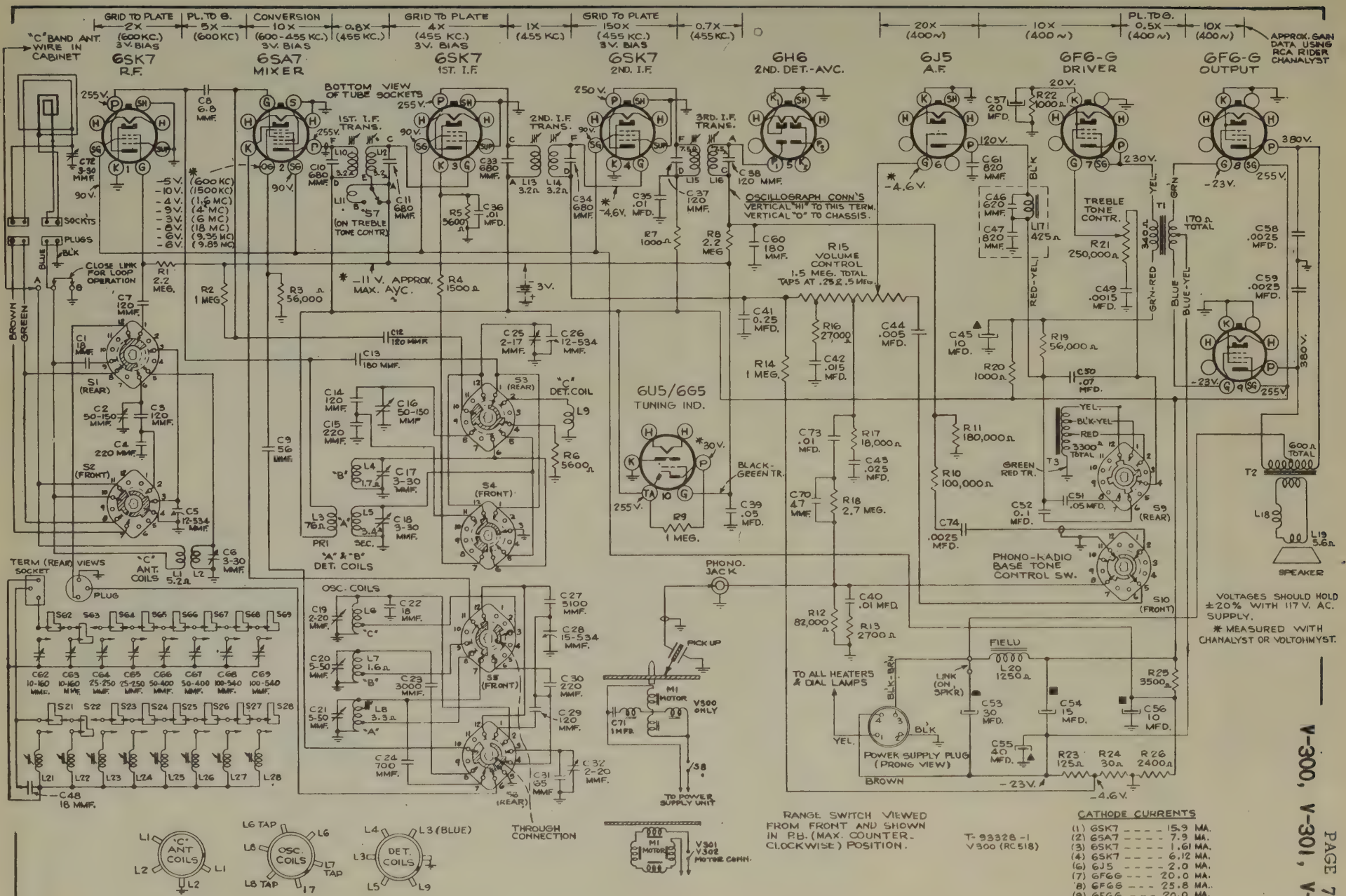
| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch or Seven 12-inch |
| Turntable Speed | 78 r.p.m. |
| Type Pickup | Crystal |
| Pickup Impedance | 100,000 ohms at 1,000 cycles |
| Average Output | 1½ volts at 1,000 cycles across ½ meg. |

**POWER SUPPLY RATINGS**

| | |
|---|---|
| 105-125 volts, 60 cycles | 200 watts |
| 105-125 volts, 25 cycles | 200 watts |

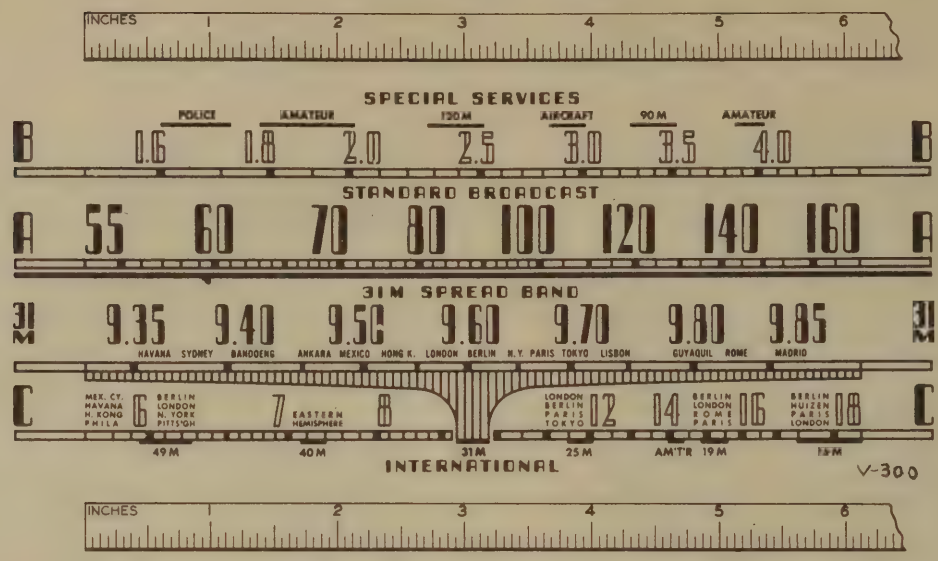
| Cabinet Dimensions (inches) | Height | Width | Depth |
|---|---|---|---|
| V-300 | 35 | 35¼ | 18-7/16 |
| V-301 | 36 | 38 | 17⅜ |
| V-302 | 42 | 34⅛ | 17⅜ |

Tuning Drive Ratio ..... 13-1




When measuring R-F and I-F gain. a 3-volt bias was connected between the A.V.C. bus and chassis. as shown in dotted lines.

# Alignment Procedure




Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

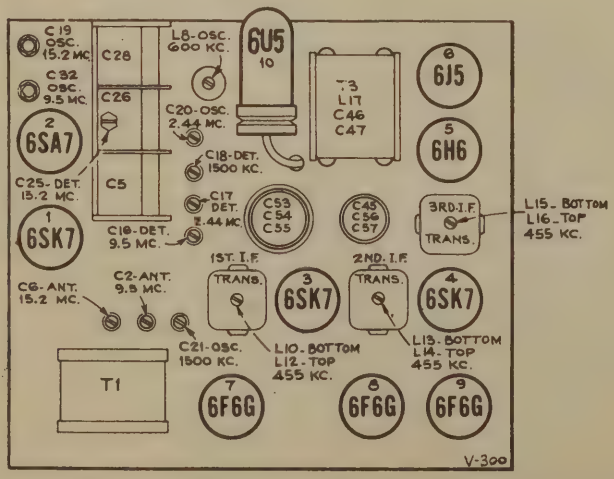
Each method is described below.

Using Tuning Dial.—

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.




Using Calibration Scale.—

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale.

Dial-Pointer Adjustment.—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Turn "Treble Tone Control" (center knob) counter-clockwise so that I-F is in "Sharp" position. | | | |
| 2 | 2nd I-F grid, in series with .01 mfd. | 455 kc | "A" Band Quiet Point at HF end | L15 and L16* (3rd I-F Trans.) |
| 3 | 1st I-F grid, in series with .01 mfd. | | | L13 and L14* (2nd I-F Trans.) |
| 4 | 1st-Det. grid, in series with .01 mfd. | | | L10 and L12* (1st I-F Trans.) |
| 5 | Turn Treble Tone Control full clockwise to "Broad" position. Response on CRO should be the conventional double-humped type. If necessary, retouch 3rd I-F transformer slightly (so as not to disturb the "Sharp" curve appreciably). Leave control in sharp position for the following steps. | | | |
| 6 | Ant. terminal, in series with 47 mmfd. (link closed) | 15.2 mc | "C" Band 15.2 mc | C19 (osc.)** C25 (det.) C6 (ant.) |
| 7 | | 9.5 mc | "31M" Band 9.5 mc | C32 (osc.)** C16 (det.) C2 (ant.) |
| 8 | Rear stator of gang, in series with .01 mfd. | 2.44 mc | "B" Band 2.44 mc | C20 (osc.) C17 (det.) |
| 9 | | 600 kc | "A" Band 600 kc | L8 (osc.) Rock in |
| 10 | | 1,500 kc | "A" Band 1,500 kc | C21 (osc.) C18 (det.) |
| 11 | Repeat steps 9 and 10. | | | |
| 12 | Install and connect chassis in cabinet. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band trimmer C72 (on loop). Rock in L8 at 600 kc. | | | |

* Adjust for coincidental curves and maximum gain.

** Use minimum capacity peak if two peaks can be obtained. (Check for correct peak on "C" band by tuning receiver to 14.29 mc, where a weaker signal should be received.)

# Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES** |
| | Model V-300 (RC-518) |
| | Model V-301 } (RC-518A) |
| | Model V-302 } |
| 36342 | Board—"Antenna-Ground" board |
| 36452 | Capacitor—Mica trimmer |
| 12884 | Capacitor—Air trimmer—long—2-20 mmfd. |
| 36453 | Capacitor—Mica trimmer comprising 1 section of 3-30 mmfd., 1 section of 50-150 mmfd., and 1 section of 5-50 mmfd. |
| 14079 | Capacitor—6.8 mmfd. |
| 36463 | Capacitor—18 mmfd., ceramic |
| 12722 | Capacitor—18 mmfd. |
| 13141 | Capacitor—47 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 36203 | Capacitor—65 mmfd., ceramic |
| 31352 | Capacitor—120 mmfd., silvered mica |
| 34700 | Capacitor—120 mmfd., mica |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 36174 | Capacitor—680 mmfd. |
| 36421 | Capacitor—700 mmfd. |
| 12536 | Capacitor—820 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 36679 | Capacitor—5,100 mmfd. |
| 33806 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 32787 | Capacitor—.05 mfd. |
| 4886 | Capacitor—.05 mfd. |
| 14626 | Capacitor—.07 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 32240 | Capacitor—Electrolytic comprising 2 sections of 10 mfd., 350 volts, and 1 section of 20 mfd., 25 volts |
| 36599 | Capacitor—Electrolytic comprising 1 section of 30 mfd., 450 volts, 1 section of 15 mfd., 350 volts, and 1 section of 40 mfd., 25 volts |
| 34285 | Clip—Tuning tube clip and thumb screw |
| 36442 | Coil—Antenna coil—"C" band |
| 36334 | Coil—Oscillator coil |
| 36451 | Coil—R. F. coil |
| 36441 | Condenser—Variable tuning condenser |
| 36449 | Control—High frequency and selectivity control |
| 36447 | Control—Volume control |
| 32634 | Cord—Indicator drive cord (45 in. approx. overall) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 36332 | Drum—Drive drum |
| 35870 | Indicator—Station selector indicator |
| 36446 | Pack—Audio filter pack |
| 36840 | Plate—Dial back plate complete with drive cord pulleys—less tuning indicator clip and screw |
| 35787 | Plug—Phono. input plug |
| 36009 | Plug—2 prong male plug for loop cable |
| 32641 | Plug—3 prong male plug for selector cable |
| 31830 | Plug—4 prong male plug for power supply cable |
| 12493 | Plug—5-prong male plug for speaker cable |
| 36454 | Resistor—Voltage divider comprising 1 section of 125 ohms, 3.2 watts, 1 section of 30 ohms, .8 watt, 1 section of 2,400 ohms, 4.2 watts, and 1 section of 3,500 ohms, 10 watts |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 4687 | Resistor—1,000 ohms, ½ watt |
| 30152 | Resistor—1,000 ohms, 1 watt |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 14024 | Resistor—2,700 ohms, ½ watt |
| 13714 | Resistor—5,600 ohms, ½ watt |
| 13045 | Resistor—18,000 ohms, ½ watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 12286 | Resistor—56,000 ohms, ½ watt |
| 14023 | Resistor—82,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 13698 | Resistor—180,000 ohms, ½ watt |
| 12013 | Resistor—1 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 14752 | Resistor—2.7 meg. ½ watt |
| 14350 | Screw—No. 8-32 sq. head set screw for drive drum |
| 36340 | Shaft—Tuning shaft |
| 31364 | Socket—Dial lamp socket |
| 31251 | Socket—Tube socket |
| 13871 | Socket—Tuning indicator tube socket |
| 31418 | Spring—Drive cord spring |
| 12007 | Spring—Retaining spring for core and stud |
| 36448 | Switch—Low tone-radio-phono. switch |
| 36450 | Switch—Range switch |
| 36443 | Transformer—First I-F transformer |
| 36444 | Transformer—Second I-F transformer |
| 35790 | Transformer—Third I-F transformer |
| 36445 | Transformer—Input transformer |

| STOCK No. | DESCRIPTION |
|---|---|
| | **POWER SUPPLY ASSEMBLIES** |
| 18469 | Socket for No. 36599 capacitor |
| 30868 | Plug—2 contact female plug for motor cable |
| 5040 | Plug—4 contact female plug for power supply cable |
| 31251 | Socket—Tube socket |
| 36567 | Switch—Power switch |
| 36753 | Transformer—Power transformer—110 volts, 25 cycles |
| 36613 | Transformer—Power transformer—110 volts, 50-60 cycles |

**Model V-300**

FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON RP-152J

**Models V-301—V-302**

FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON RP-153

| | |
|---|---|
| | **SPEAKER ASSEMBLIES** (RL-94-1) |
| 36654 | Cap—Cone center dust cap |
| 36653 | Clamp—Speaker cone center mounting clamp, screw, and washer (2 req'd) |
| 36651 | Coil—Speaker field coil (1,250 ohms) |
| 36652 | Coil—Speaker hum neutralizing coil |
| 36648 | Cone—Speaker cone, voice coil, and center suspension |
| 36650 | Cover—Speaker magnet cover |
| 36655 | Gasket—Speaker rim gasket (felt back) mounts between cone and baffle (4 sections complete). |
| 31539 | Plug—5 prong male for speaker leads |
| 36649 | Transformer—Output transformer |
| | **MISCELLANEOUS ASSEMBLIES** |
| 11891 | Lamp—Compartment jewel lamp |
| 36456 | Bezel—Push button bezel—less buttons |
| 36324 | Bracket—Support bracket for holding fibre pan—Model V-300 |
| 36461 | Button—Plug button (motorboard)—Models V-300 and V-301 |
| 36299 | Button—Push button |
| 35998 | Capacitor—Mica trimmer—3-30 mmfd. |
| 36458 | Capacitor—Mica trimmer comprising 2 sections of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 2 sections of 100-540 mmfd. each for push button switch |
| 36463 | Capacitor—18 mmfd., ceramic |
| 35803 | Coil—Push button oscillator coil |
| 37133 | Coil—Push button oscillator coil for low-frequency range |
| 36002 | Coil—Loop primary coil |
| 35871 | Core—Adjustable core and stud for push button oscillator coils |
| 36460 | Cover—Compartment lamp lead cover—stainless steel—Model V-300 |
| 36328 | Cover—Compartment lamp lead cover—stainless steel—Model V-301 |
| 36601 | Decalcomania—Control panel decal |
| 36603 | Decalcomania—Power switch decal |
| 35393 | Decalcomania—Television decal |
| 36386 | Decalcomania—Trade mark decal. (His Master's Voice) |
| 35467 | Decalcomania—Trade mark decal. (RCA Victrola) |
| 36600 | Dial—Glass dial scale |
| 36455 | Escutcheon—Walnut dial escutcheon—less dial. |
| 37805 | Escutcheon—Mahogany dial escutcheon—less dial |
| 4585 | Hinge—Bottom door hinges—upper and lower hinge for 1 door—Models V-301 and V-300. |
| 30698 | Hinge—Cabinet lid hinge—Model V-300 |
| 36609 | Hinge—Cabinet lid hinge—Model V-301 |
| 36610 | Hinge—One (1) set of cabinet door hinges—comprising upper and lower hinges—for upper L.H. door and bottom L.H. door—Model V-302 |
| 36817 | Hinge—One (1) set of cabinet door hinges—comprising upper and lower hinges for upper door—Model V-301 and upper R.H. door for Model V-302 |
| 36246 | Holder—needle book holder—Model V-300 |
| 13103 | Jewel—Compartment lamp cap |
| 36297 | Knob—Range switch or low tone-radio-phono. switch knob |
| 36298 | Knob—Tuning, volume control, or high tone control knob |
| 11765 | Lamp—Dial lamp |
| 5117 | Lamp—Record compartment lamp |
| 36323 | Loop—Antenna loop |
| 36149 | Marker—Station marker |
| 36683 | Mounting—Mounting hardware complete for 1 motorboard—Model V-300 |
| 36325 | Nut—Wing nut for holding sealing pan |

## REPLACEMENT PARTS (Continued)

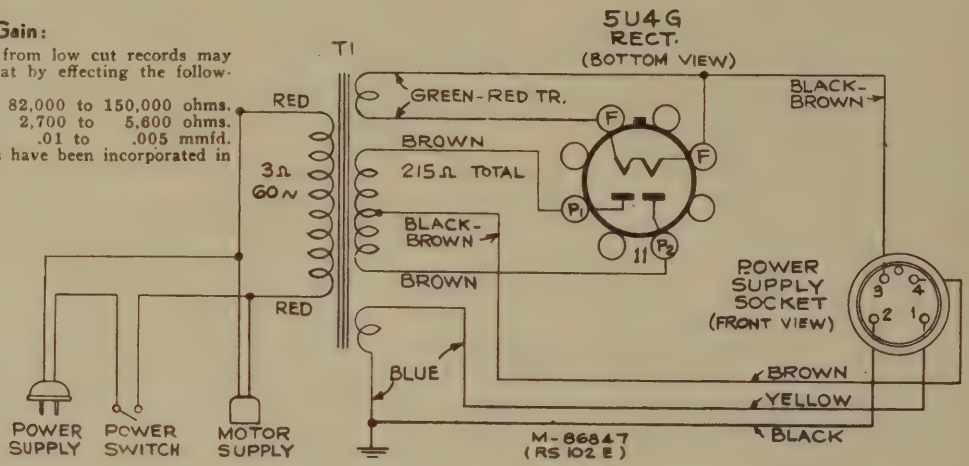
| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| 36826 | Pan—Fibre pan for sealing record changer—Model V-300 | | 33083 | Spring—Cabinet lid support spring for L.H. support—Model V-300 | |
| 34794 | Pull—Door pull—Model V-300 | | 36802 | Spring—Conical spring for loop bearing | |
| 36819 | Pull—Door pull and screw—Model V-302 | | 30900 | Spring—Retaining spring for knobs, Stock Nos. 36297 and 36298 | |
| 36818 | Pull—Door pull and screw—Model V-301 | | 34053 | Spring—Retaining spring for push button | |
| 35740 | Shade—Compartment lamp shade—Models V-300 and V-301 | | 34423 | Support—Cabinet lid support—R.H.—Model V-300 | |
| 36407 | Shade—Compartment lamp shade—Model V-302 | | 35831 | Support—Cabinet lid support—L.H.—Model V-300 | |
| 35999 | Socket—2-contact socket | | 34793 | Support—Cabinet lid support—Model V-301 | |
| 36422 | Socket—3-contact female plug | | 36457 | Switch—Selector switch | |
| 30536 | Spring—Cabinet lid support spring for R.H. support—Models V-300 and V-301 | | | | |

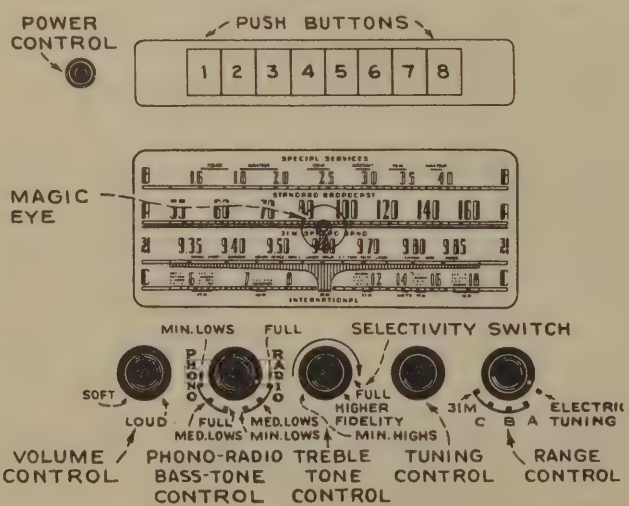
### Increasing Phono Gain:

The audio output from low cut records may be increased somewhat by effecting the following changes:

Change R12 from 82,000 to 150,000 ohms.
Change R13 from 2,700 to 5,600 ohms.
Change C40 from .01 to .005 mmfd.

The above changes have been incorporated in 2nd production.






**For data on record changer mechanism, refer to Service Note on RP-152J for Model V-300, and to RP-153 for Models V-301 and V-302.**

## Push Button Adjustment

The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

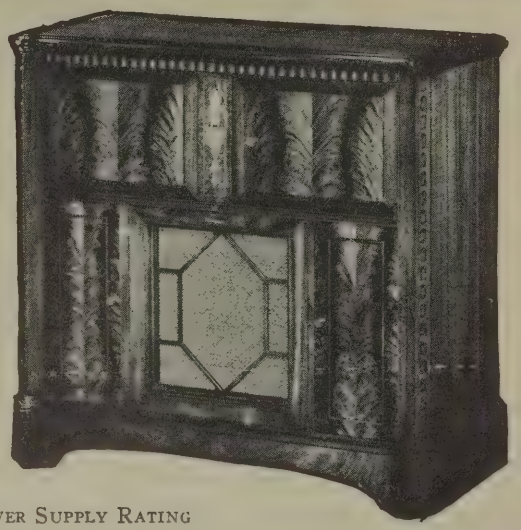
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "Electric Tuning" position, pusn in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L28) to receive the station.
4. After oscillator core is set correctly, adjust C69 for maximum output.
   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L21 or L22 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

# MODEL VHR-307

**Chassis No. RC-555**

## Home-Recording Radio-Phonograph Combination



## Electrical and Mechanical Specifications

FREQUENCY RANGES

| | |
|---|---|
| Broadcast, "A" Band | 540-1,600 kc |
| Short Wave, "B" Band (VHR-207, 407) | 1,550-4,000 kc |
| Short Wave, "C" Band | 5,800-18,000 kc |
| Spread Band | 9,340-9,860 kc |

INTERMEDIATE FREQUENCY ..... 455 kc

TUBE COMPLEMENT

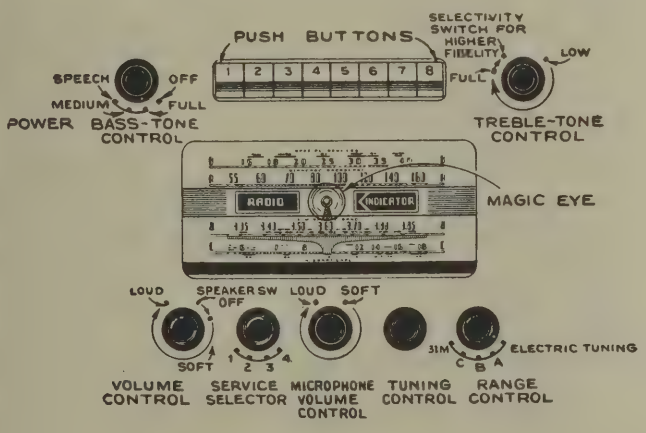
| | |
|---|---|
| RCA-6SK7 | R-F Amplifier |
| RCA-6SA7 | 1st-Det., Oscillator |
| RCA-6SK7 | 1st-I-F Amplifier |
| RCA-6SK7 | 2nd-I-F Amplifier |
| RCA-6H6 | 2nd-Det., A.V.C. |
| RCA-6SJ7 | 1st-A-F Amplifier |
| RCA-6F6-G | Driver |
| RCA-6F6-G (2) | Power Output |
| RCA-12K7GT | Microphone Pre-Amplifier |
| RCA-6H6 | "Contractor" Rectifier |
| RCA-6U5 | "Magic Eye" Indicator |
| RCA-5U4-G | Rectifier |

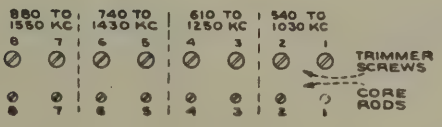
POWER OUTPUT

| | |
|---|---|
| Undistorted watts | 18 |
| Maximum watts | 20 |

LOUDSPEAKER

| | |
|---|---|
| (Electrodynamic) | RL-94-2 |
| Diameter | 15 inches |
| Voice-coil impedance at 400 cycles | 7.2 ohms |




POWER SUPPLY RATING

105-125 volts, 60 cycles ..... 200 watts

CABINET DIMENSIONS

| | |
|---|---|
| Height (inches) | 36 |
| Width (inches) | 38 |
| Depth (inches) | 20 3/16 |

TUNING DRIVE RATIO ..... 13 to 1

PHONOGRAPH (RP-155)

| | |
|---|---|
| Type | Automatic |
| Record Capacity | Eight 10-inch or Seven 12-inch |
| Turntable Speed | 78 r.p.m. |
| Drive | Motor drive through idler on inside rim of turntable |
| Type Pickup | Crystal |
| Pickup Impedance | 100,000 ohms at 1,000 cycles |
| Average Output | 1½ volts at 1,000 cycles across ½ meg. |

RECORDER (RP-155)

| | |
|---|---|
| Recording Head (cutter) | Crystal |
| Impedance of Cutter at 1,000 cycles | Approx. 60,000 ohms |
| Turntable Speed | 78 r.p.m. |
| Grooves Cut per Inch | Approx. 115 |
| Inches Cut per Minute | Approx. .713 inch |
| Recording Blank Discs | Coated metal-base or coated paper-base |
| Recording Disc Diameter | Up to 10 inches |
| Drive | Motor drive through idler on inside rim of turntable; the turntable spindle drives a lead screw under motor board which guides the recorder arm from outside of recording blank to inside |
| Motor Wattage | 35 watts |

Refer to VHR-202 for Recording Instructions Data

Refer to RP-155 for Data on Automatic Mechanism

## Push Button Adjustment

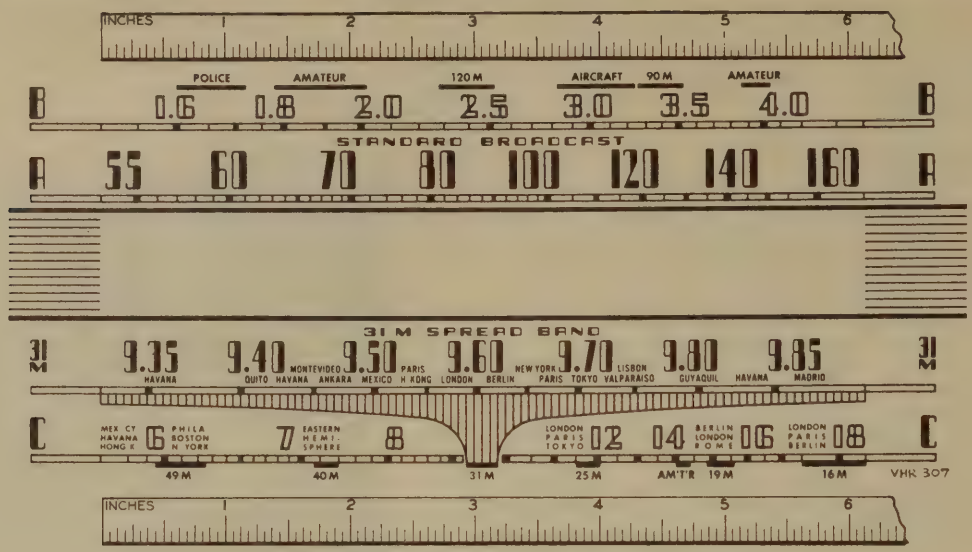
The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "Electric Tuning" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L28) to receive the station.
4. After oscillator core is set correctly, adjust C86 for maximum output.
   **Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.**
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On the 880 to 1,550 kc push-button, the higher frequency stations may be received with L21 or L22 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one

# Alignment Procedure




**NOTE: For dial mechanism refer to VHR-202.**

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Electronic Voltmeter.**—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

**Calibration Scale.**—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.

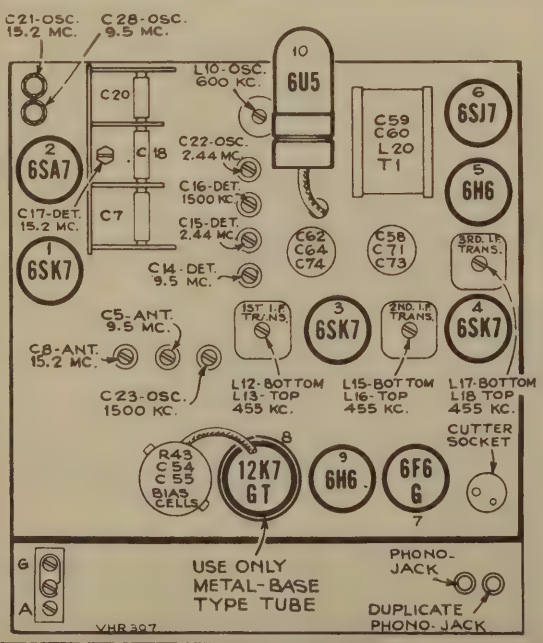
Each method is described below.

**Using Tuning Dial.—**

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.




**Using Calibration Scale.—**

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale.

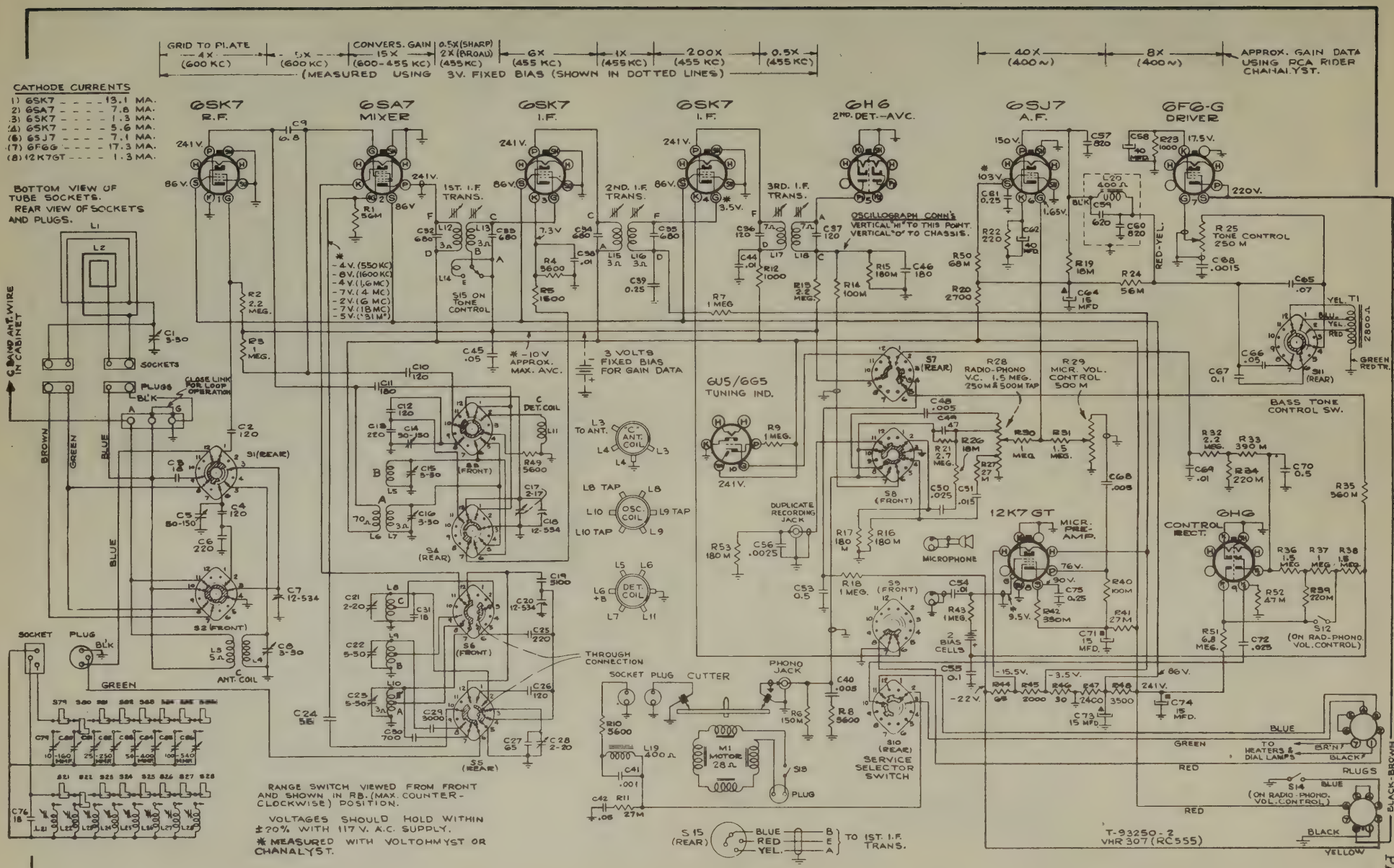
**Dial-Pointer Adjustment.**—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

| Steps | Connect the high side of the test-osc. to— | Tune test-osc. to— | Turn Radio dial to— | Adjust the following for maximum peak output |
|---|---|---|---|---|
| 1 | Turn "Treble Tone Control" counter-clockwise so that I-F is in "Sharp" position. | | | |
| 2 | 2nd I-F grid, in series with .01 mfd. | 455 kc | "A" Band Quiet Point at HF end | L17 and L18* (3rd I-F Trans.) |
| 3 | 1st I-F grid, in series with .01 mfd. | | | L15 and L16* (2nd I-F Trans.) |
| 4 | 1st-Det. grid, in series with .01 mfd. | | | L12 and L13* (1st I-F Trans.) |
| 5 | Turn Treble Tone Control full clockwise to "Broad" position. Response on CRO should be the conventional double-humped type. If necessary, retouch 3rd I-F transformer slightly (so as not to disturb the "Sharp" curve appreciably). Leave control in sharp position for the following steps. | | | |
| 6 | Ant. terminal, in series with 47 mmfd. (link closed) | 15.2 mc | "C" Band 15.2 mc | C21 (osc.)** C17 (det.)*** C8 (ant.)*** |
| 7 | | 9.5 mc | "31M" Band 9.5 mc | C28 (osc.)** C14 (det.)*** C5 (ant.)*** |
| 8 | Rear stator of gang, in series with .01 mfd. | 2.44 mc | "B" Band 2.44 mc | C22 (osc.) C15 (det.) |
| 9 | | 600 kc | "A" Band 600 kc | L10 (osc.) Rock in |
| 10 | | 1,500 kc | "A" Band 1,500 kc | C23 (osc.) C16 (det.) |
| 11 | Repeat steps 9 and 10. | | | |
| 12 | Install and connect chassis in cabinet with antenna link closed. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band trimmer C1 (on loop). Rock in L10 for peak output at 600 kc. | | | |

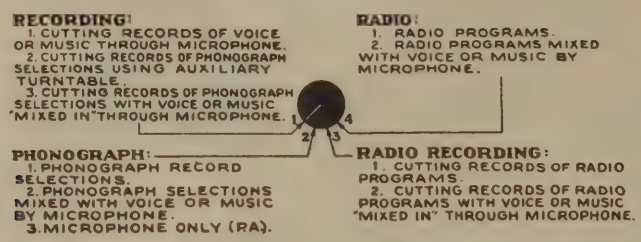
* Adjust for coincidental curves and maximum gain.

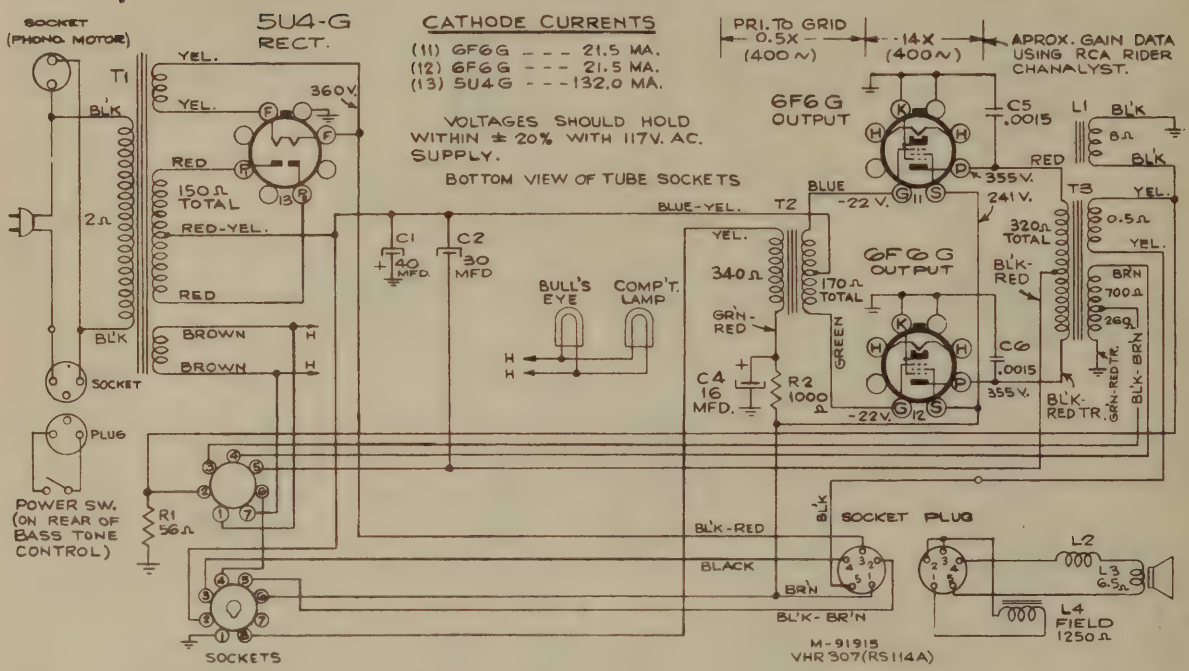
** Use minimum capacity peak if two peaks can be obtained. (Check for correct peak on "C" band by tuning receiver to 14.29 mc, where a weaker signal should be received.)

*** Rock in.


GRID TO PLATE
4X (600 KC)
5X (600 KC)
CONVERS. GAIN
15X (600-455 KC)
0.5X(SHARP) 2X(BROAD) (455 KC)
6X (455 KC)
1X (455 KC)
200X (455 KC)
0.5X (455 KC)
40X (400 ∿)
8X (400 ∿)
APPROX. GAIN DATA USING RCA RIDER CHANALYST.
(MEASURED USING 3V. FIXED BIAS (SHOWN IN DOTTED LINES)
CATHODE CURRENTS
1) 6SK7 - - - - 13.1 MA.
2) 6SA7 - - - - 7.8 MA.
3) 6SK7 - - - - 1.3 MA.
4) 6SK7 - - - - 5.6 MA.
5) 6SJ7 - - - - 7.1 MA.
6) 6FG6 - - - - 17.3 MA.
7) 12K7GT - - - - 1.3 MA.
6SK7 R.F.
6SA7 MIXER
6SK7 I.F.
6SK7 I.F.
6H6 2ND. DET.-AVC.
6SJ7 A.F.
6FG-G DRIVER
BOTTOM VIEW OF TUBE SOCKETS. REAR VIEW OF SOCKETS AND PLUGS.
SOCKETS
PLUGS
CLOSE LINK FOR LOOP OPERATION
GROUND ANT. WIRE IN CABINET
BROWN
GREEN
BLUE
1ST. I.F. TRANS.
2ND. I.F. TRANS.
3RD. I.F. TRANS.
OSCILLOGRAPH CONN'S VERTICAL "HI" TO THIS POINT. VERTICAL "O" TO CHASSIS.
S15 ON TONE CONTROL
- 4 V. (550 KC)
- 8 V. (1600 KC)
- 4 V. (1.6 MC)
- 7 V. (4 MC)
- 2 V. (6 MC)
- 7 V. (18 MC)
- 5 V. (SIM.)
* - 10 V. APPROX. MAX. AVC.
3 VOLTS FIXED BIAS FOR GAIN DATA
6U5/6G5 TUNING IND.
R28 RADIO-PHONO VC. 1.5 MEG. 250 M & 500 M TAP
R29 MICR. VOL. CONTROL 500 M
BASS TONE CONTROL SW.
DUPLICATE RECORDING JACK
MICROPHONE
12K7 GT MICR. PRE-AMP.
6H6 CONTROL RECT.
2 BIAS CELLS
PHONO JACK
SOCKET PLUG CUTTER
THROUGH CONNECTION
SERVICE SELECTOR SWITCH
TO HEATERS & DIAL LAMPS
S14 (ON RADIO-PHONO VOL. CONTROL)
S12 (ON RAD-PHONO VOL. CONTROL)
RANGE SWITCH VIEWED FROM FRONT AND SHOWN IN RB. (MAX. COUNTER-CLOCKWISE) POSITION.
VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. A.C. SUPPLY.
* MEASURED WITH VOLTOHMYST OR CHANALYST.
S15 (REAR) BLUE B RED E YEL. A TO 1ST. I.F. TRANS.
T-93250-2 VHR 307 (RC555)
BLACK-BROWN
RED-YEL.
YEL. T1
GREEN RED TR.
RED
BLUE
GREEN
BLACK
YELLOW

## SERVICE SELECTOR


RECORDING:
1. CUTTING RECORDS OF VOICE OR MUSIC THROUGH MICROPHONE.
2. CUTTING RECORDS OF PHONOGRAPH SELECTIONS USING AUXILIARY TURNTABLE.
3. CUTTING RECORDS OF PHONOGRAPH SELECTIONS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.
RADIO:
1. RADIO PROGRAMS.
2. RADIO PROGRAMS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
PHONOGRAPH:
1. PHONOGRAPH RECORD SELECTIONS.
2. PHONOGRAPH SELECTIONS MIXED WITH VOICE OR MUSIC BY MICROPHONE.
3. MICROPHONE ONLY (RA).
RADIO RECORDING:
1. CUTTING RECORDS OF RADIO PROGRAMS.
2. CUTTING RECORDS OF RADIO PROGRAMS WITH VOICE OR MUSIC "MIXED IN" THROUGH MICROPHONE.
1
2
3
4




## Replacement Parts

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION |
|---|---|
| | **CHASSIS ASSEMBLIES (RC-555)** |
| 34133 | Arm—Actuating arm for service selector switch |
| 36342 | Board—"Antenna-Ground" board |
| 30766 | Cap—Rubber cap for tuning tube |
| 12884 | Capacitor—Air trimmer, 2-20 mmfd. |
| 36453 | Capacitor—Mica trimmer comprising 1 section of 3-30 mmfd., 1 section of 50-150 mmfd., and 1 section of 5-50 mmfd. |
| 36452 | Capacitor—Mica trimmer comprising 1 section of 5-50 mmfd., 2 sections of 3-30 mmfd., and 1 section of 50-150 mmfd. |
| 14079 | Capacitor—6.8 mmfd. |
| 12722 | Capacitor—18 mmfd. (C3) |
| 36463 | Capacitor—18 mmfd. (C31) |
| 13141 | Capacitor—47 mmfd. |
| 12723 | Capacitor—56 mmfd. |
| 36203 | Capacitor—65 mmfd. |
| 34700 | Capacitor—120 mmfd., mica |
| 12724 | Capacitor—120 mmfd., moulded mica |
| 31352 | Capacitor—120 mmfd. (C4) |
| 31706 | Capacitor—120 mmfd. (C26) |
| 13003 | Capacitor—180 mmfd. |
| 12694 | Capacitor—220 mmfd. |
| 36174 | Capacitor—680 mmfd. |
| 36421 | Capacitor—700 mmfd. |
| 12536 | Capacitor—820 mmfd. |
| 35643 | Capacitor—3,000 mmfd. |
| 36679 | Capacitor—5,100 mmfd. |
| 37102 | Capacitor—.001 mfd. |
| 33806 | Capacitor—.0015 mfd. |
| 34459 | Capacitor—.0025 mfd. |
| 33584 | Capacitor—.005 mfd. |
| 4937 | Capacitor—.01 mfd. |
| 11315 | Capacitor—.015 mfd. |
| 4870 | Capacitor—.025 mfd. |
| 4886 | Capacitor—.05 mfd. (C42, C66) |
| 32787 | Capacitor—.05 mfd. (C45) |
| 14626 | Capacitor—.07 mfd. |
| 4839 | Capacitor—0.1 mfd. |
| 12484 | Capacitor—0.25 mfd. |
| 12741 | Capacitor—0.5 mfd. |
| 34150 | Capacitor—Electrolytic comprising 2 sections of 15 mfd., 450 volts, and 1 section of 40 mfd., 25 volts |
| 31581 | Cell—Bias cell |
| 34285 | Clip—Tuning tube clip and thumb screw |
| 36442 | Coil—Antenna coil—"C" band |
| 37064 | Coil—Choke coil |
| 36334 | Coil—Oscillator coil |
| 36451 | Coil—R.F. coil |
| 36441 | Condenser—Variable tuning condenser |
| 36449 | Control—H.F. tone control |
| 37021 | Control—Microphone volume control |
| 37859 | Control—Radio volume control and speaker shut-off switch |
| 32634 | Cord—Indicator drive cord (approx. 45-in. over-all length) |
| 35788 | Core—Adjustable core and stud for oscillator coil |
| 36332 | Drum—Drive drum |
| 34499 | Holder—Bias cell holder |
| 37858 | Indicator—Station selector indicator |
| 33514 | Jack—Phono input jack |
| 36446 | Pack—Filter pack |
| 37017 | Plate—Dial plate complete with pulleys—less tuning tube clip and screw and indicator screw |
| 11824 | Plug—2-contact female plug for microphone cable—less shell |
| 36009 | Plug—2-prong male plug for loop cables |
| 31567 | Plug—3-prong male plug for power switch |
| 32641 | Plug—3-prong male plug for push button cable |
| 36395 | Plug—7-prong male plug for power supply cable |

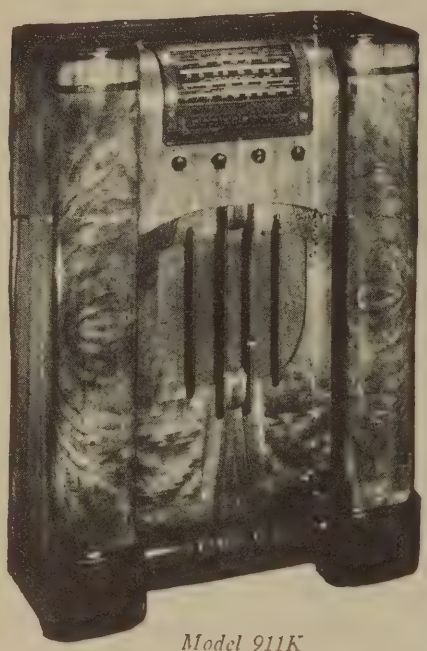
# Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 33606 | Plug—8-prong male plug for amplifier input cable |
| 32289 | Pulley—Drive cord pulley |
| 14561 | Resistor—220 ohms, ½ watt |
| 14720 | Resistor—1,000 ohms, ½ watt |
| 34766 | Resistor—1,000 ohms, ½ watt |
| 14499 | Resistor—1,500 ohms, ½ watt |
| 34473 | Resistor—2,000 ohms, 10 watts |
| 14024 | Resistor—2,700 ohms, ½ watt |
| 37861 | Resistor—Voltage divider comprising 1 section of 65 ohms, 3 watts, 1 section of 30 ohms, 1 watt, 1 section of 2,400 ohms, 4½ watt and 1 section of 3,500 ohms, 10 watts |
| 13714 | Resistor—5,600 ohms, ½ watt |
| 30151 | Resistor—18,000 ohms, 1 watt |
| 12738 | Resistor—27,000 ohms, ½ watt |
| 37876 | Resistor—27,000 ohms, 3 watts |
| 12412 | Resistor—47,000 ohms, ½ watt |
| 30650 | Resistor—56,000 ohms, ½ watt |
| 13715 | Resistor—68,000 ohms, ½ watt |
| 14560 | Resistor—100,000 ohms, ½ watt |
| 14020 | Resistor—150,000 ohms, ½ watt |
| 13698 | Resistor—180,000 ohms, ½ watt |
| 12264 | Resistor—220,000 ohms, ½ watt |
| 14983 | Resistor—330,000 ohms, ½ watt |
| 13479 | Resistor—390,000 ohms, ½ watt |
| 12486 | Resistor—560,000 ohms, ½ watt |
| 12013 | Resistor—1 meg., 1/10 watt |
| 13730 | Resistor—1 meg., ½ watt |
| 12201 | Resistor—1.5 meg., ½ watt |
| 12679 | Resistor—2.2 meg., ½ watt |
| 14752 | Resistor—2.7 meg., ½ watt |
| 14661 | Resistor—6.8 meg., ½ watt |
| 37018 | Screen—Screen marked "Indicator |
| 37026 | Screen—Service selector indicator screen |
| 14350 | Screw—No. 8-32 sq. hd. set screw for drive drum and actuating arm |
| 36340 | Shaft—Tuning shaft |
| 37025 | Slider—Indicator slider complete—less screen |
| 31364 | Socket—Dial lamp socket |
| 33165 | Socket—Recording head socket |
| 31251 | Socket—Tube socket |
| 13871 | Socket—Tuning tube socket |
| 31418 | Spring—Indicator drive cord spring |
| 37862 | Switch—L.F. tone control and power switch |
| 36450 | Switch—Range switch |
| 37860 | Switch—Service selector switch |
| 36443 | Transformer—First I.F. transformer |
| 36444 | Transformer—Second I.F. transformer |
| 35790 | Transformer—Third I.F. transformer |
| 35969 | Washer—"C" washer for tuning shaft |
| 38324 | Sleeve—Rubber sleeve for No. 34133 arm |
| | FOR RECORD CHANGER REPLACEMENT PARTS SEE SERVICE NOTES ON RP-155 |
| | **MICROPHONE ASSEMBLIES** |
| 37028 | Base—Microphone base only |
| 37033 | Cable—Microphone cable (12 ft. long) complete less spring, shield, and plug |
| 37029 | Cover—Front cover and screen |
| 37030 | Crystal—Microphone crystal and holder |
| 37031 | Gasket—Moulded rubber ring |
| 37034 | Housing—Crystal housing and handle |
| 14793 | Plug—2-prong male plug for microphone cable |
| | **POWER UNIT ASSEMBLIES** |
| 33806 | Capacitor—.0015 mfd. |
| 37877 | Capacitor—Electrolytic 16 mfd., 450 volts |
| 34065 | Capacitor—Electrolytic 30 mfd., 450 volts |
| 31584 | Capacitor—Electrolytic 40 mfd., 150 volts |
| 30868 | Plug—2-contact female plug for motor cable |
| 31572 | Plug—3-contact female plug for power switch cable |
| 12493 | Plug—5-contact female plug for speaker cable |
| 14507 | Resistor—56 ohms, ½ watt |
| 34766 | Resistor—1,000 ohms, ½ watt |
| 36059 | Shield—Power transformer bottom shield |
| 36058 | Shield—Power transformer top shield |
| 31364 | Socket—Compartment lamp and jewel lamp socket |
| 31251 | Socket—Tube socket |
| 33144 | Socket—6F7 tube socket |
| 36445 | Transformer—Driver transformer |
| 37863 | Transformer—Output transformer |
| 37048 | Transformer—Power transformer, 105-120 volts, 50-60 cycle |

| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES (RL-94-2)** |
| 36654 | Cap—Cone center dust cap |
| 36653 | Clamp—Speaker cone center mounting clamp, screw, and washer (2 req'd) |
| 36651 | Coil—Speaker field coil (1,250 ohms) |
| 36652 | Coil—Speaker hum neutralizing coil |
| 36648 | Cone—Speaker cone, voice coil, and center suspension |
| 36650 | Cover—Speaker magnet cover |
| 36655 | Gasket—Speaker rim gasket (felt back) mounts between cone and baffle (4 sections complete) |
| 31539 | Plug—5-prong male for speaker leads |
| | **MISCELLANEOUS ASSEMBLIES** |
| 36456 | Bezel—Push button bezel less buttons |
| 36639 | Bracket—Lamp bracket |
| 36461 | Button—Plug button |
| 36300 | Button—Push button |
| 13103 | Cap—Pilot lamp cap |
| 35998 | Capacitor—Mica trimmer—3-30 mmfd. |
| 36458 | Capacitor—Mica trimmer comprising 2 sections of 10-160 mmfd. each, 2 sections of 25-250 mmfd. each, 2 sections of 50-400 mmfd. each, and 2 sections of 100-540 mmfd. each |
| 36463 | Capacitor—18 mmfd., ceramic |
| 36462 | Clamp—Dial clamp |
| 36002 | Coil—Loop primary coil |
| 35803 | Coil—P.B. oscillator coil |
| 37133 | Coil—P.B. oscillator coil—low frequency end |
| 35871 | Core—Adjustable core and stud for P.B. oscillator coils |
| 36328 | Cover—Stainless steel cover for compartment lamp leads |
| 37881 | Decalcomania—Control panel decal |
| 37880 | Decalcomania—H.F. tone control decal |
| 35393 | Decalcomania—Television decal |
| 37879 | Decalcomania—Tone control and power switch decal |
| 36386 | Decalcomania—Trade mark decal ("His Master's Voice") |
| 35467 | Decalcomania—Trade mark decal ("RCA Victrola") |
| 37866 | Dial—Glass dial scale |
| 36609 | Hinge—Cabinet lid hinge |
| 4585 | Hinge—Lower right hand door hinges (1 upper and 1 lower) |
| 37934 | Hinge—Upper right hand door hinges (1 upper and 1 lower) |
| 36298 | Knob—Tuning, H.F. tone control, microphone volume control, radio volume control or service selector switch |
| 36297 | Knob—Range switch or L.F. tone and power switch knob |
| 5117 | Lamp—Compartment lamp |
| 11765 | Lamp—Dial or pilot lamp |
| 11891 | Lamp—Indicator lamp |
| 36323 | Loop—Antenna loop complete |
| 36149 | Marker—Station selector markers |
| 36818 | Pull—Door pull |
| 11607 | Receptacle—Packaged needle receptacle |
| 37800 | Shade—Compartment lamp shade |
| 35999 | Socket—2-contact female socket for antenna loop |
| 36422 | Socket—P.B. switch cable socket |
| 30536 | Spring—Cabinet lid support spring |
| 36802 | Spring—Conical spring for loop support bracket and bearing |
| 37878 | Springs—Motorboard suspension top spring, bottom spring, screw and lockwasher (4 req'd) |
| 30900 | Spring—Retaining spring for knobs |
| 34053 | Spring—Retaining spring for push button |
| 34793 | Support—Cabinet lid support |
| 36457 | Switch—P.B. selector switch |
| 37349 | Weight—Lead weight for recorder head |

# MODEL 911K

## Eleven-Tube, Five-Band, Electric-Tuning, A-C, Superheterodyne Receiver



*Model 911K*

### Antenna Connections

**RCA Victor Master Antenna Kit.**—Connect the twisted-pair transmission line to terminals A1 and A2 on the terminal board at rear of chassis. Connect the counter-poise to A3. Terminal G may be connected to ground, but this connection is not necessary for correct operation.

**Noise-Reducing Adjustment.**—After the RCA Victor Master Antenna Kit is connected to the receiver, tune the receiver to a point near 900 kc where no station is heard. Turn volume control clockwise until noise is heard. If no noise of a regular character is audible, start any brush-type motor-driven appliance, such as a vacuum cleaner, electric razor, refrigerator, etc., but do not bring it too near the receiver. This will generate noise as a continuous crackling, or buzz. Adjust C1 to a point where this noise is reduced to a minimum.

Adjustment of the noise reducing trimmer C1 should be made in the customer's home, with the RCA Victor Master Antenna connected to the receiver.

**This adjustment is effective only when the RCA Victor Master Antenna is used. For all other types of antenna, the noise-adjustment trimmer should be screwed all the way down.**

**Other Antennas.**—Use terminals A1 and A3 on the receiver terminal board as antenna and ground connecting points respectively. Terminal A3 may be connected to terminal G, unless this causes interference, in which case this connection should be omitted.

## Electrical Specifications

FREQUENCY RANGES

| | |
|---|---|
| "Standard Broadcast" (A) | 540-1,720 kc |
| "49 Meter Band" | 5,920-6,230 kc |
| "31 Meter Band" | 9,480-9,690 kc |
| "25 Meter Band" | 11,680-11,940 kc |
| "19 Meter Band" | 15,080-15,390 kc |

R-F ALIGNMENT FREQUENCIES

| | |
|---|---|
| "Standard Broadcast" (A) | 1,500 kc (osc., det., ant.), 600 kc (osc.) |
| "49 Meter Band" | 6,100 kc (osc.) |
| "31 Meter Band" | 9,600 kc (osc., det., ant.) |
| "25 Meter Band" | 11,800 kc (osc.) |
| "19 Meter Band" | 15,200 kc (osc.) |

Intermediate Frequency ..... 455 kc

RCA TUBE COMPLEMENT

| | | | |
|---|---|---|---|
| (1) RCA-6K7 | R-F Amplifier | (7) RCA-6F5 | A-F Amp. and Audio Phase Inverter |
| (2) RCA-6A8 | First Detector | (8) RCA-6F6 | Power Output |
| (3) RCA-6J7 | Heterodyne Oscillator | (9) RCA-6F6 | Power Output |
| (4) RCA-6K7 | I-F Amplifier | (10) RCA-6U5 | "Magic Eye" Tuning Tube |
| (5) RCA-6H6 | Second Det., A.V.C., and Muting | (11) RCA-5T4 | Full-Wave Rectifier |
| (6) RCA-6F5 | Audio Voltage Amplifier | | |

Pilot Lamps ..... One Mazda 47, 6-8 volts, .15 amp; Two Mazda 44, 6.3 volts, .25 amp.

POWER SUPPLY RATINGS

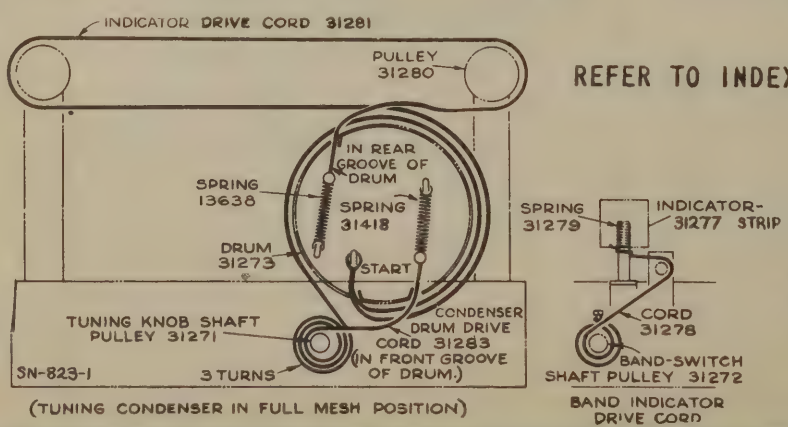
| | |
|---|---|
| Rating A | 105-125 volts, 50-60 cycles, 120 watts |
| Rating B | 105-125 volts, 25-30 cycles, 120 watts |
| Rating C | 105-125/140-160/195-250 volts, 50-60 cycles, 120 watts |

POWER OUTPUT

| | |
|---|---|
| Undistorted | 10 watts |
| Maximum | 12 watts |

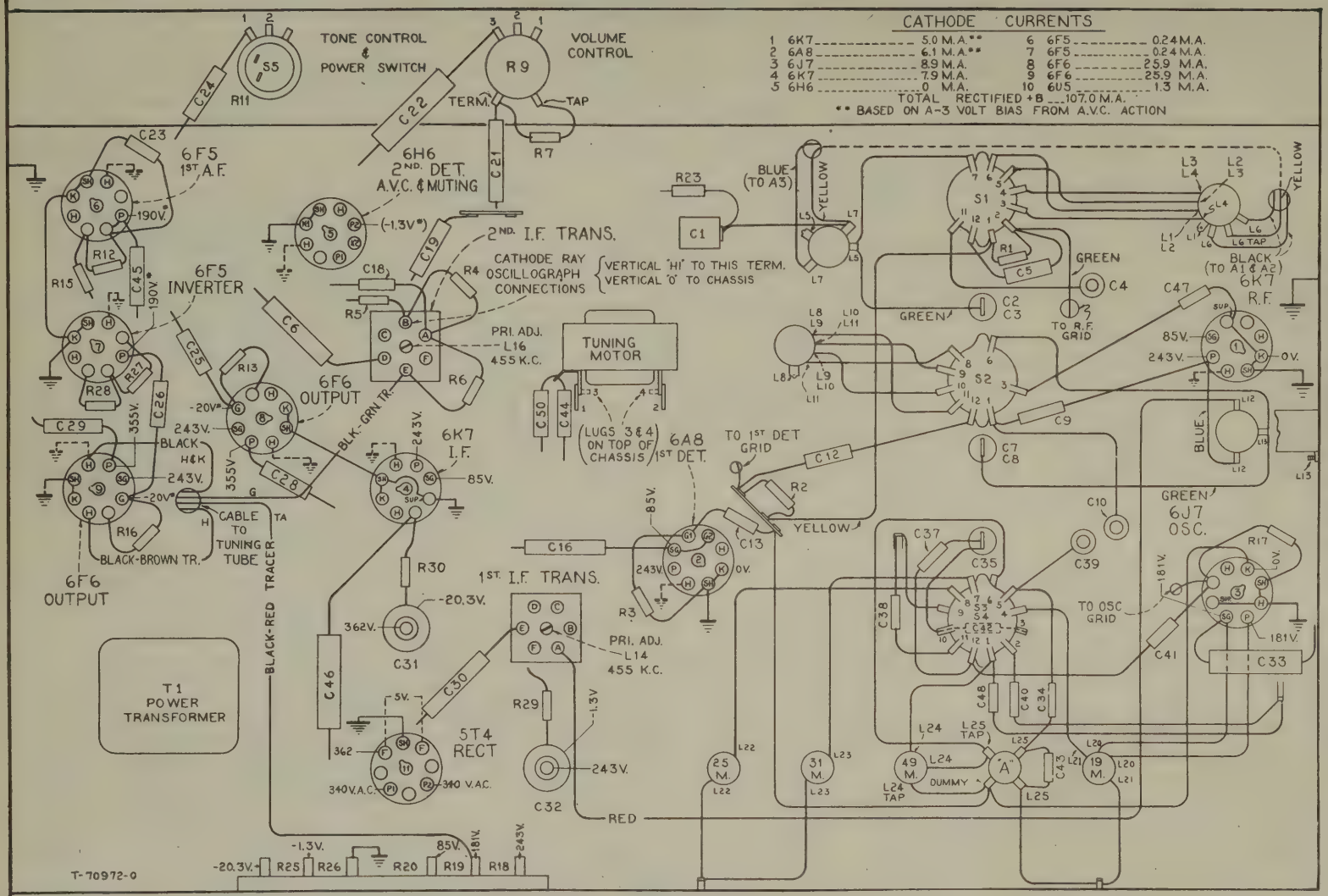
LOUDSPEAKER

| | |
|---|---|
| Type | 12-inch Electrodynamic |
| Voice Coil Impedance | 2.2 ohms at 400 cycles |



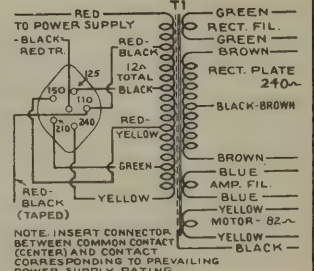

REFER TO INDEX FOR DATA ON ELECTRIC TUNING

REFER TO PAGE 444c FOR DATA ON MODIFIED I.F. TRANS. USED ON SOME PRODUCTIONS.



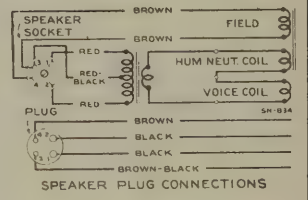

BOTTOM VIEW REAR OF CHASSIS

*R-F Wiring Diagram and Socket Voltages*




UNIVERSAL TRANS. CONNECTIONS

**Above** — Universal Power Transformer Connections. (110-volt supply for a Victrola Attachment may be obtained by connecting the motor to the red and the red-black leads.)

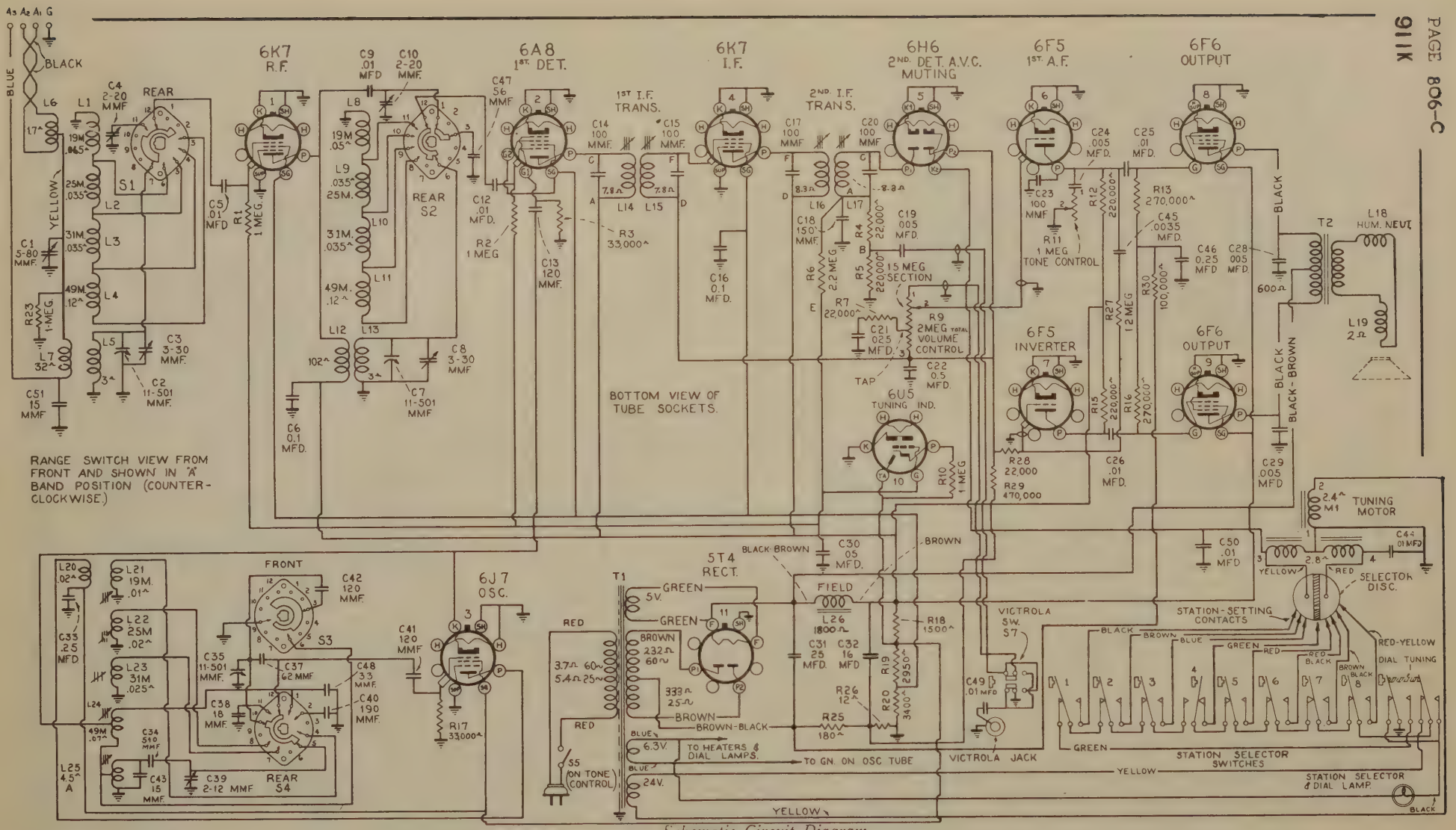



SPEAKER PLUG CONNECTIONS

**Above** — Connections and Colors of Loudspeaker and Cable.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. The actual measured voltages will be lower, depending on the voltmeter loading.




*Schematic Circuit Diagram*

**Precautionary Lead Dress.—**

( 1) Keep tuning tube cable and the lead from the left pilot light away from the 6F5 grid cap.

( 2) Leads on spread-band antenna and r-f coils should be kept short as possible.

( 3) Keep black lead from L25 away from C38 and L24.

( 4) Keep black lead from L25 to cathode lug on 6J7 away from R17

( 5) The power cord lead and the primary lead of the power transformer which connect to the power switch should be twisted together.

( 6) Keep C13 away from the 6A8 control grid lead and from the chassis.

( 7) Shielded leads to Victrola jack must be dressed away from switch terminals and jack

( 8) Blue and black leads from antenna board to coils must be twisted.

( 9) Black lead and condenser which connect to 6F6 plate should be kept away from inverter grid lead and resistors which connect to it.

# ALIGNMENT PROCEDURE

**Cathode-Ray Alignment** is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

**Output Meter Alignment.**—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

**Calibration Scale on Indicator-Drive-Cord Drum.**—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

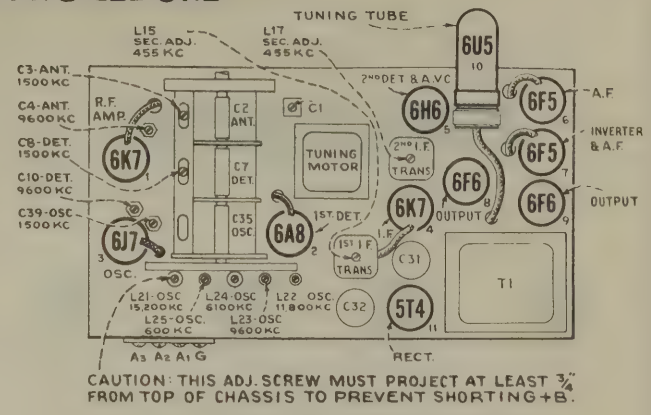
As the first step in r-f alignment, check the position of the drum. The "0" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

**Pointer for Calibration Scale.**—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0 mark on the calibration scale when the plates are fully meshed.

**Dial-Indicator Adjustment.**—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

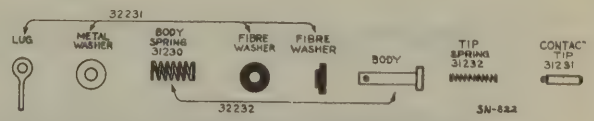
**Spread-Band Alignment.**—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.




*Tube and Trimmer Locations*

**When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.**

For additional information, refer to booklet "RCA Victor Receiver Alignment."




*(Above) Component Parts of Station-Setting Contact*

| Steps | Connect the high side of test-oscillator to— | Tune Test-Oscillator to— | Range Selector | Set Tuning Gang to— | Adjust the following for max. peak output |
|---|---|---|---|---|---|
| No. 1 | 6K7 I-F grid cap, in series with .01 mfd. | 455 kc | "A" | Quiet point between 550-750 kc | L16, L17 (2nd I-F transformer) |
| No. 2 | 6A8 1st-det. grid cap, in series with .01 mfd. | 455 kc | "A" | | L14, L15 (1st I-F transformer) |
| No. 3 | A2, in series with 100 mmf. Connect A3 to chassis. | 1,500 kc | "A" | 1,500 kc (151.5°) | C39 (osc.) C3 (ant.) C8 (det.) |
| No. 4 | A2, in series with 100 mmf. Connect A3 to chassis. | 600 kc | "A" | 600 kc (30.0°) | L25 (osc.) |
| No. 5 | A2, in series with 100 mmf. Connect A3 to chassis. | 1,500 kc | "A" | 1,500 kc (151.5°) | C39 (osc.) |
| No. 6 | A2. Connect A1 to chassis. | 6,100 kc | "49M" | 6,100 kc (106°) | L24 (osc.)* |
| No. 7 | A2. Connect A1 to chassis. | 9,600 kc | "31M" | 9,600 kc (102°) | L23 (osc.)** C4 (ant.) C10 (det.) |
| No. 8 | A2. Connect A1 to chassis. | 11,800 kc | "25M" | 11,800 kc (90.0°) | L22 (osc.)** |
| No. 9 | A2. Connect A1 to chassis. | 15,200 kc | "19M" | 15,200 kc (78.0°) | L21 (osc.)** |

* Use maximum inductance peak (plunger in) if two peaks can obtained.

** Use minimum inductance peak (plunger out) if two peaks can be obtained.

Note that the heterodyne oscillator tracks **above** the signal frequency on all bands except "49M," where it is lower than the signal frequency.

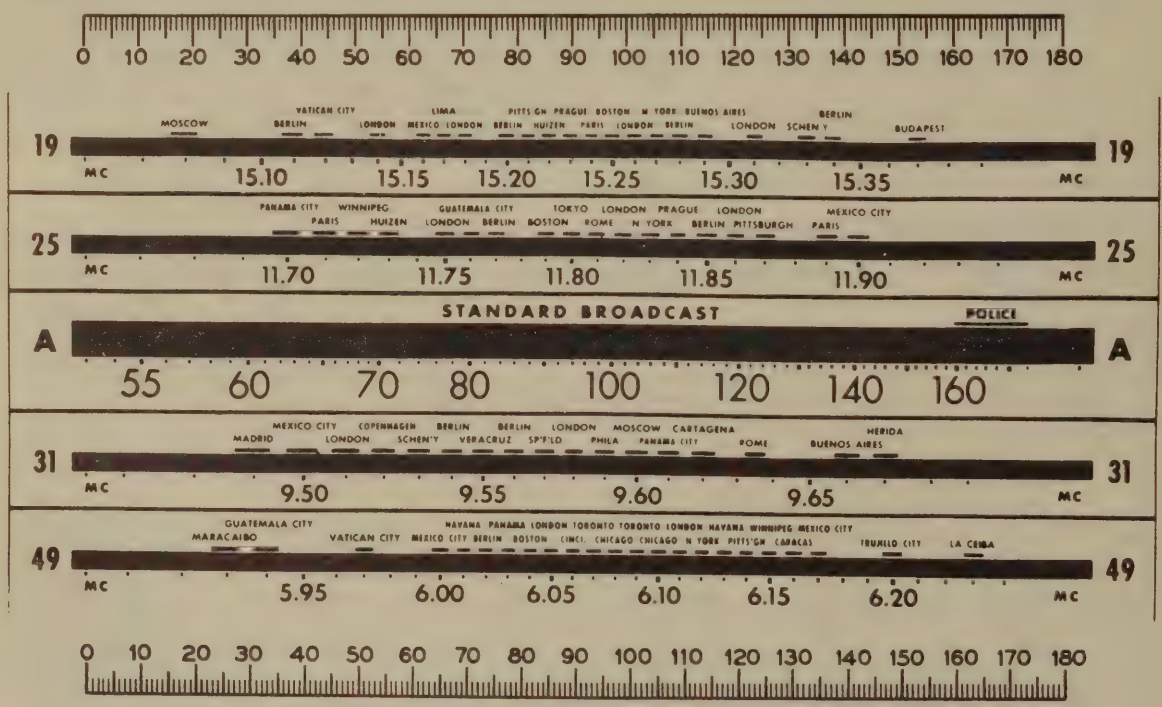
# ADJUSTMENTS FOR ELECTRIC TUNING

1. Make a list of the desired eight stations, arranged in order from low to high frequencies.

*Location of Controls*

The left-hand push-button is a Victrola-Attachment switch. The right-hand push-button is for dial tuning.

2. Turn range selector to "A" band, turn power on, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list, using the "Magic Eye" for accurate tuning.
5. Hold down the "dial-tuning" button, and press down station button No. 1 (second from left). Both buttons will stay down. Move station-setting contact No. 1 to the insulating line on the disc at rear of gang. When the contact is correctly centered on the insulating line, the central dial lamp will go out.
6. Press down any other button in order to release the dial-tuning button and station button No. 1. Then press down station button No. 1 again. The electric tuning mechanism will function to tune in the station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.




*Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales*

# REPLACEMENT PARTS

**Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.**

| STOCK No. | DESCRIPTION | | STOCK No. | DESCRIPTION | |
|---|---|---|---|---|---|
| | RECEIVER ASSEMBLIES | | 31351 | Capacitor—190 mmfd. (C40) | |
| 31253 | Board—Antenna and ground terminal board | | 31348 | Capacitor—510 mmfd. (C34) | |
| | | | 30303 | Capacitor—.0035 mfd. (C45) | |
| | | | 4838 | Capacitor—.005 mfd. (C19, C24, C28, C29) | |
| 12714 | Capacitor—Adjustable trimmer, 2-12 mmfd. (C39) | | 14393 | Capacitor—.01 mfd. (C5, C12, C25, C26, C44, C49, C50) | |
| 12884 | Capacitor—Adjustable trimmer, 2-20 mmfd. (C4, C10) | | 4858 | Capacitor—.01 mfd. (C9) | |
| 31252 | Capacitor—Adjustable trimmer, 5-80 mmfd. (C1) | | 4870 | Capacitor—.025 mfd. (C21) | |
| 31353 | Capacitor—15 mmfd. (C43) | | 4886 | Capacitor—.05 mfd. (C30) | |
| 12896 | Capacitor—15 mmfd. (C51) | | 4839 | Capacitor—0.1 mfd. (C6, C16) | |
| 31350 | Capacitor—18 mmfd. (C38) | | 12484 | Capacitor—0.25 mfd. (C33, C46) | |
| 31354 | Capacitor—33 mmfd. (C48) | | 30867 | Capacitor—0.5 mfd. (C22) | |
| 12723 | Capacitor—56 mmfd. (C47) | | 5212 | Capacitor—16 mfd. (C32) | |
| 31349 | Capacitor—62 mmfd. (C37) | | 14531 | Capacitor—25 mfd. (C31) | |
| 12720 | Capacitor—100 mmfd. (C23) | | 31544 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft—25 cycle models only | |
| 31270 | Capacitor—100 mmfd. (C14, C15, C17, C20) | | 31237 | Clutch—Variable condenser drive gear clutch and pinion gear—engages pin on motor shaft, 50/60 cycle models only | |
| 12724 | Capacitor—120 mmfd. (C13, C41) | | | | |
| 31352 | Capacitor—120 mmfd. (C42) | | 31263 | Coil—"A" band antenna coil (L5, L7) | |
| 12725 | Capacitor—150 mmfd (C18) | | | | |

## Replacement Parts (Continued)

| STOCK No. | DESCRIPTION |
|---|---|
| 31257 | Coil—"A" band oscillator coil (L20) |
| 31265 | Coil—"A" band detector coil (L12, L13) |
| 31264 | Coil—19, 25, 31, and 49 meter bandspread antenna coil (L1, L2, L3, L4, L6) |
| 31266 | Coil—19, 25, 31, and 49 meter bandspread detector coil (L8, L9, L10, L11) |
| 31258 | Coil—19 meter band oscillator coil (L20, L21) |
| 31254 | Coil—25 meter band oscillator coil (L22) |
| 31255 | Coil—31 meter band oscillator coil (L23) |
| 31256 | Coil—49 meter band oscillator coil (L24) |
| 31234 | Condenser—3-gang variable condenser (C2, C3, C7, C8, C35) |
| 31231 | Contact—Contact tip for station-setting contact |
| 31260 | Core—Adjustable core and stud for "A" band oscillator coil |
| 31269 | Core—Adjustable core and stud for i-f transformer |
| 31259 | Core—Adjustable core and stud for 19, 25, 31 or 49 meter band oscillator coils |
| 31273 | Drum—Indicator drive cord drum |
| 31240 | Flywheel—Variable condenser drive motor flywheel |
| 31545 | Gear—Variable condenser intermediate drive gear and pinion gear, 25 cycle models only |
| 31238 | Gear—Variable condenser intermediate drive gear and pinion gear, 50/60 cycle models only |
| 31239 | Gear—Variable condenser knob shaft drive gear and hub |
| 11891 | Lamp—Dial lamp |
| 31480 | Lamp—Electric tuning adjustment indicator lamp |
| 31243 | Leather—Friction leather for flywheel |
| 31246 | Motor—Variable condenser drive motor (M-1) —25 cycle models only |
| 31235 | Motor—Variable condenser drive motor (M-1) —50/60 cycle models only |
| 31228 | Plate—Selector contact plate—less contacts |
| 31227 | Plate—Selector mounting plate—mounts on rear of variable condenser |
| 5040 | Plug—4-contact female for speaker cable |
| 31271 | Pulley—Motor pulley |
| 31272 | Pulley—Range switch pulley |
| 31250 | Resistor—Voltage divider comprising one 1,500 ohms, one 2,950 ohms, one 3,400 ohms, one 12 ohms, and one 180 ohms sections (R18, R19, R20, R25, R26) |
| 14284 | Resistor—22,000 ohms, 1/10 watt (R4, R7, R28) |
| 11300 | Resistor—33,000 ohms, 1/10 watt (R3, R17) |
| 11281 | Resistor—100,000 ohms, 1/10 watt (R30) |
| 11398 | Resistor—220,000 ohms, 1/10 watt (R12, R15) |
| 12264 | Resistor—220,000 ohms, ½ watt (R5) |
| 11453 | Resistor—270,000 ohms, 1/10 watt (R13, R16) |
| 11452 | Resistor—470,000 ohms, 1/10 watt (R29) |
| 12013 | Resistor—1 meg., 1/10 watt (R2, R10) |
| 13730 | Resistor—1 meg., ½ watt (R1, R23) |
| 31056 | Resistor—1.2 meg., 1/10 watt (R27) |
| 5131 | Resistor—2.2 meg., 1/10 watt (R6) |
| 31233 | Rotor—Selector rotor disc—mounts on rear of variable condenser shaft |
| 31241 | Screw—¼ x 20 headless, cone point set screw for flywheel |
| 14350 | Screw—No. 8-32 square head set screw for selector rotor disc |
| 4119 | Screw—No. 8-32 headless set screw for gear, Stock No. 31239 |
| 4669 | Screw—No. 8-32 square head set screw for pulley, Stock Nos. 31271 and 31272, and drum, Stock No. 31273 |
| 31364 | Socket—Dial lamp socket |
| 13871 | Socket—Magic Eye socket |
| 31251 | Socket—Radiotron socket |
| 31365 | Socket—Tuning indicator lamp insulated socket |
| 31232 | Spring—Contact tip spring for station-setting contact |
| 12007 | Spring—Retaining spring for core, Stock No. 31269 |
| 31230 | Spring—Station-setting contact body spring |
| 31261 | Spring—Tension spring for core, Stock No. 31259 |
| 31262 | Spring—Tension spring for core, Stock No. 31260 |
| 31242 | Spring—Tension spring for flywheel |
| 31245 | Support—Variable condenser motor mounting support and studs—for 25 cycle models only |
| 31244 | Support—Variable condenser motor mounting support and studs—for 50-60 cycle models only |
| 31236 | Support—Variable condenser drive gear mounting support and studs assembly |
| 31247 | Switch—Range switch (S1, S2, S3, S4) |
| 31248 | Tone Control—H-f tone control and power switch (R11, S5) |
| 31267 | Transformer—First i-f transformer (L14, L15, C14, C15) |
| 31268 | Transformer—Second i-f transformer (L16, L17, C17, C20) |
| 31226 | Transformer—Power transformer, 110 volts, 25-60 cycle (T1) |
| 31225 | Transformer—Power transformer, 110 volts, 50-60 cycle (T1) |
| 31249 | Volume Control (R9) |

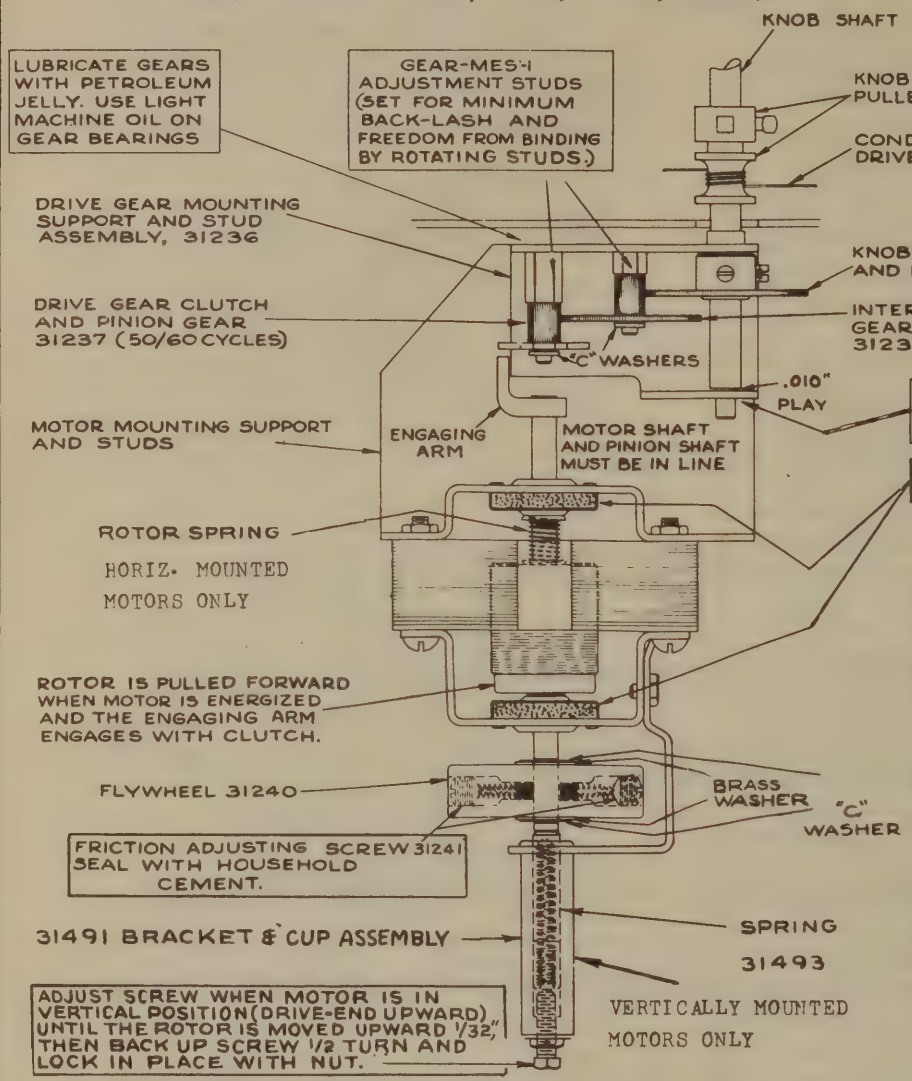
| STOCK No. | DESCRIPTION |
|---|---|
| | **SPEAKER ASSEMBLIES** |
| 13866 | Cap—Dust cap for cone center |
| 11234 | Coil—Field coil (L26) |
| 11469 | Coil—Neutralizing coil (L18) |
| 31275 | Cone—Speaker cone and voice coil (L19) |
| 5039 | Plug—4-contact male plug for speaker |
| 14534 | Transformer—Output transformer (T2) |
| 14357 | Washer—Spring washer to hold field coil securely |
| | **MISCELLANEOUS ASSEMBLIES** |
| 31276 | Bracket—Band indicator mounting bracket complete except less band indicating strip, cord, and tension spring |
| 31282 | Bracket—Magic Eye bracket and holder |
| 31358 | Button—Station selector switch push button |
| 31344 | Contact—Push button switch contacts—comprising 13 contacts riveted on insulating strip |
| 31345 | Contact—Push button switch contacts—comprising 10 contacts riveted on insulating strip |
| 31278 | Cord—Band indicator drive cord |
| 31281 | Cord—Indicator pointer drive cord |
| 31283 | Cord—Variable condenser drum drive cord |
| 31456 | Cover—8 protective covers for push button markers |
| 31359 | Cushion—Station selector push button rubber cushion |
| 31363 | Dial—Station selector dial and crystal |
| 31362 | Escutcheon—Station selector dial escutcheon—less dial scale and push buttons |
| 31277 | Indicator—Band indicator strip |
| 31284 | Indicator—Station selector indicator pointer |
| 31355 | Knob—Range switch, tone control, volume control, or station selector knob |
| 31346 | Lock-Plate—Push button switch lock-plate—comprising 10 contact locks in one strip |
| 31589 | Marker—Station call letter markers for push buttons |
| 31457 | Marker—"Victrola" marker for push button |
| 31458 | Marker—"Dial Tuning" marker for push button |
| 31280 | Pulley—Indicator pointer drive cord pulley |
| 14887 | Retainer—Indicator pointer drive cord pulley retainer |
| 31285 | Screen—Station selector dial color screen and light diffuser |
| 11210 | Screw—Chassis mounting screws, washers, and lockwashers for 1 chassis |
| 3993 | Screw—No. 6-32 square head set screw for pointer slide stop |
| 31287 | Shaft—Indicator pointer slide shaft |
| 31286 | Slide—Indicator pointer carriage and clip |
| 31347 | Socket—Pickup socket and bracket |
| 13638 | Spring—Indicator pointer drive cord tension spring |
| 31418 | Spring—Variable condenser drive cord tension spring |
| 31279 | Spring—Tension spring for band indicator |
| 31970 | Spring—Tension spring for station selector push button switch latch bar |
| 14270 | Spring—Retaining spring for knob, Stock No. 31355 |
| 31288 | Stop—Indicator pointer slide stop |
| 31360 | Switch—Pickup switch for mounting on push-button switch assembly (S7) |
| 31312 | Switch—Station selector push-button switch and bracket assembly, complete |
| | **ANTENNA ASSEMBLIES** |
| 31426 | Counterpoise Line—Additional length 60 ft. long |
| 12426 | Insulator—Strain and counterpoise insulator |
| 9816 | Transmission Line—Additional length 60 ft. long |

**Loudspeakers:**

The loudspeakers used in these instruments are stamped RL-70F-4 or RL-70H-2. The replacement parts for both speakers are the same and are listed in Service Data for 911K. For complete speaker, order Stock No. 31530 (RL-70H-2).

# Electric Tuning Mechanism

## MODELS HF-2, HF-4, HF-6, HF-8, 11Q4, 11QK, 11QU, U-30, U-46 98K, 99T, 99K, U-126, U-128, U-129, K-130 U-130, U-132, U-134, 910KG, 911K


KNOB SHAFT 31681
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUDS.)
KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES)
"C" WASHERS
.010" PLAY
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
MOTOR MOUNTING SUPPORT AND STUDS
ENGAGING ARM
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR SPRING
HORIZ. MOUNTED MOTORS ONLY
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ENGAGING ARM ENGAGES WITH CLUTCH.
FLYWHEEL 31240
BRASS WASHER
"C" WASHER
FRICTION ADJUSTING SCREW 31241 SEAL WITH HOUSEHOLD CEMENT.
31491 BRACKET & CUP ASSEMBLY
SPRING 31493
ADJUST SCREW WHEN MOTOR IS IN VERTICAL POSITION (DRIVE-END UPWARD) UNTIL THE ROTOR IS MOVED UPWARD 1/32", THEN BACK UP SCREW 1/2 TURN AND LOCK IN PLACE WITH NUT.
VERTICALLY MOUNTED MOTORS ONLY

*Motor and Gear Mechanism*

**There must be 1/32-inch clearance between the end of the engaging arm and the face of the intermediate gear when the motor is in its full forward position.**

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken.

When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The operating-end has dark insulating material and the brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

### Lubrication

**Motor bearings and gear bearings;** use light machine oil.

Gear faces; use "Pure Oil No. 611" or petroleum jelly.

**Dial-indicator pulleys and rails;** use "Castordag" or petroleum jelly.

**Selector disc;** apply ***thin*** film of petroleum jelly.

## Oscillation of Tuning Mechanism

The principal of operation necessitates that the mechanism go through several quick reversals on arriving at the desired station frequency and before reaching a dead stop. Three of four reversals are normal. The number of reversals and consistency of operation depends mainly on the flywheel friction adjustment, however, in some cases the selector disc and station setting contacts are involved. The following suggestions may be helpful where excessive pointer oscillation is experienced.

### Oscillation on Certain Buttons Only

(1) Check contact tip of selector assembly for loose fit in body. See that nose of contact is not burned nor distorted out of correct shape. Replace tip if necessary; do not attempt to file the tips.

(2) Clean the insulating gap of selector disc, being sure to remove all metal particles and metallic fragments from beveled edges of the brass. Each contact should be checked to assure that clearance exists (approx. .010-in) between it and the disc when stopped in position on the station.

(3) Inspect the insulating gap to see that it has not changed shape due to bending or warping. Replace the disc if cleaning and adjustment fail to give correct operation.

### Oscillation On All Buttons

(1) Slow oscillation indicates friction adjustment of flywheel is too tight. Loosen set screw in flywheel slightly.

(2) Rapid oscillation indicates friction adjustment is too loose. Tighten set screw in flywheel slightly.

(3) If definite adjustment cannot be reached, remove

spring from behind flywheel set screw and increase its length by stretching; replace and make the necessary adjustments. Install a new spring if necessary.

(4) See that leather friction pad is not binding in its hole, and that it is saturated with lubricant. "Neats-Foot" oil should be used for this purpose.

(5) Incorrect balance of the flywheel sometimes prevents correct adjustment. The standard service replacement flywheel Stock No. 31240 may be used to definitely eliminate this cause.

(6) The number of oscillations varies somewhat with line voltage.

(7) Stability of adjustment is slightly better if made after a brief run-in period.

## Adjustment of Selector Disc

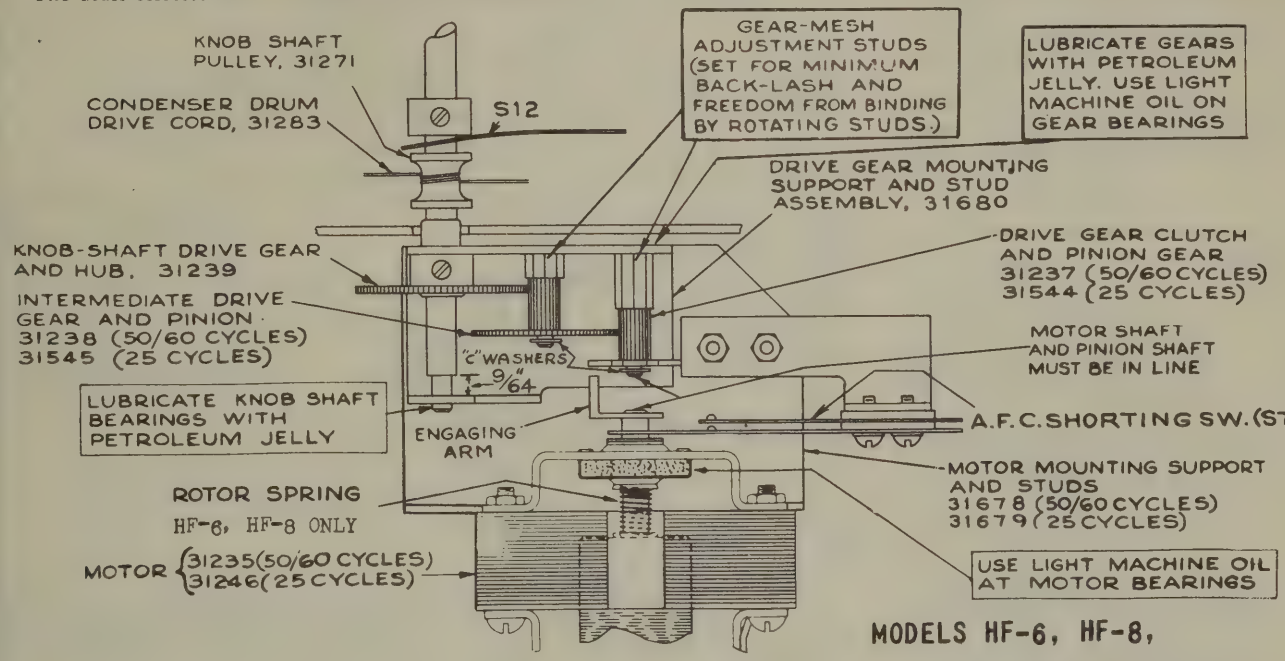
The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the beveled operating-end at the left (viewed from rear).

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

## Adjustments

To adjust S12, loosen knob shaft pulley, and adjust it so that when shaft is pushed all the way in, the ends of the leaves of S12 will be deflected 1/32-inch from their original position. When tuning shaft is released, distance between contacts of S12 should be 1/32-inch.

S7 should be adjusted so that when motor is in its full forward or upward position, the ends of the leaves should be deflected 1/32-inch from their original position.

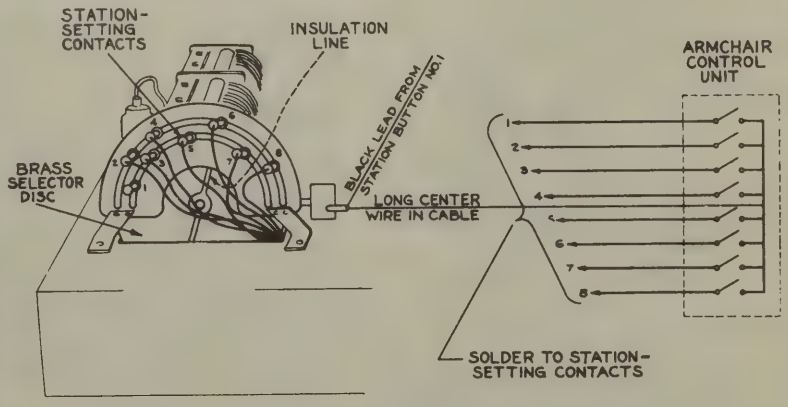

KNOB SHAFT PULLEY, 31271
CONDENSER DRUM DRIVE CORD, 31283
S12
GEAR-MESH ADJUSTMENT STUDS (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUDS.)
LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31680
KNOB-SHAFT DRIVE GEAR AND HUB, 31239
DRIVE GEAR CLUTCH AND PINION GEAR 31237 (50/60 CYCLES) 31544 (25 CYCLES)
INTERMEDIATE DRIVE GEAR AND PINION 31238 (50/60 CYCLES) 31545 (25 CYCLES)
"C" WASHERS T-9/64"
MOTOR SHAFT AND PINION SHAFT MUST BE IN LINE
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ENGAGING ARM
A.F.C. SHORTING SW. (S7)
MOTOR MOUNTING SUPPORT AND STUDS 31678 (50/60 CYCLES) 31679 (25 CYCLES)
ROTOR SPRING
HF-6, HF-8 ONLY
MOTOR {31235 (50/60 CYCLES) 31246 (25 CYCLES)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS

**MODELS HF-6, HF-8, U-132, U-134 ONLY.**

## Armchair Control Unit

*Station-Setting Contacts and Selector Disc*

This illustration shows connections for a G8A Armchair Control Unit. This unit is not supplied with the receiver but may be added as an accessory.




| Station Button | Color of Lead To Station-Setting Contact |
|---|---|
| No. 1 | Black |
| No. 2 | Brown |
| No. 3 | Blue |
| No. 4 | Green |
| No. 5 | Red |
| No. 6 | Red-black |
| No. 7 | Brown-black |
| No. 8 | Red-yellow |

When a Model G8A Armchair Control is connected to the receiver it duplicates the action of the push-buttons on the front panel when No. 1 button is pressed down. The black lead from push-button No. 1 is unsoldered from No. 1 station-setting contact and soldered to a terminal board which is to be mounted on the frame of selector mechanism. If desired one of the other seven station buttons on the set may be used in place of No. 1 button.

This arrangement allows the use of only seven of the eight buttons when tuning in stations at the set, but allows the use of the entire eight buttons on the Armchair Control. In operating the G8A Armchair Control the push-button must be held down until the station has been tuned in. Care must be taken not to hold two of the station-buttons down at one time as both windings of the motor may be engaged instantaneously causing the motor to be inoperative and overheated.

## Modified Electric Tuning Motor—Friction Clutch Type:

Some 1938-39 electric tuning models incorporate a drive motor corresponding to the accompanying drawings. This motor employs a friction clutch, its flywheel requires no adjustment, and starting is accomplished by means of a capacitive phase shifting circuit. Replacement tock numbers and models involved are as follows:

| | Models 98K, 99T, 99K, 910KG, 911K, 11Q4, 11QK Stock No. | Models HF-2, HF-4, U-126, U-128, U-130, 11QU Stock No. | Models HF-6, HF-8, U-132, U-134 Stock No. |
|---|---|---|---|
| (a) Motor, 60 mfd. capacitor, roller and damper (50-60 cycle).. | 32095 | 32095 | 32095 |
| (b) Motor, 180 mfd. capacitor, and roller (25 cycle)..... | 32434 | 32434 | 32434 |
| (c) Motor mounting bracket..... | 32087 | 32090 | 32089 |
| (d) Drive gear assembly (comprising disc and pinion, knob shaft, drive gear and bracket)..... | 32091 | 32091 | 32092 |

The mechanical clutch type motor (Stock No. 31235 for 50-60 cycle and No. 31246 for 25 cycle) is replaceable for service purposes where desired by the friction clutch type motor (a) or (b) if the revised bracket (c) and drive gear assembly (d) are used as specified above. (The mechanical clutch type motors, Stock Nos. 31235 and 31246, will be continued as replacement parts.)

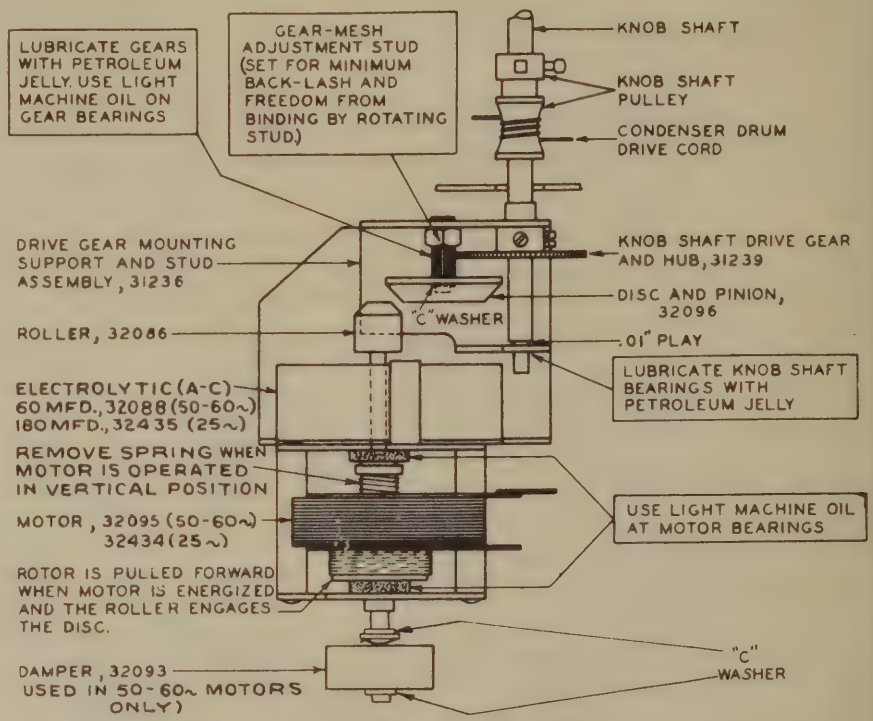
**Note No. 1**—When installing motor on all "Victrola" models remove thrust spring on motor shaft by pulling out with long-nose pliers.

**Note No. 2**—Rubber roller is attached to shaft with shellac.

**Note No. 3**—An 820 mmf. capacitor (Stock No. 12536) must be added across the selector disc circuit.

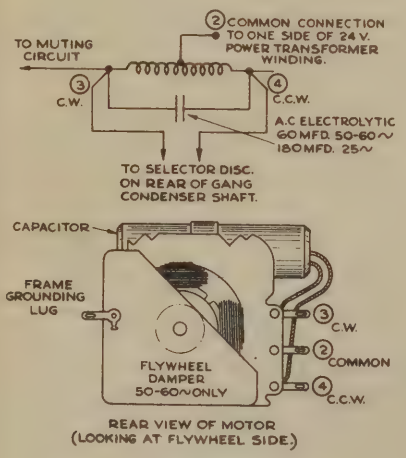
## Replacement Parts for Friction Clutch Type Motor:

| Stock No. | |
|---|---|
| 32088 | Capacitor—60 mfd. a-c electrolytic, 40 volts (50-60 cycle only) |
| 32435 | Capacitor—180 mfd. a-c electrolytic, 40 volts (25 cycle only) |
| 32093 | Damper—Flywheel damper for rear end of motor shaft (50-60 cycle motors only) |
| 32096 | Disc—Friction disc and pinion gear |
| 31239 | Gear—Knob shaft drive gear and hub |
| 32086 | Roller—Rubber friction roller for front end of motor shaft |
| 31681 | Shaft—Dial drive knob shaft |
| 32094 | Washers — Washers for mounting damper on 50-60 cycle motor |


LUBRICATE GEARS WITH PETROLEUM JELLY. USE LIGHT MACHINE OIL ON GEAR BEARINGS
GEAR-MESH ADJUSTMENT STUD (SET FOR MINIMUM BACK-LASH AND FREEDOM FROM BINDING BY ROTATING STUD.)
KNOB SHAFT
KNOB SHAFT PULLEY
CONDENSER DRUM DRIVE CORD
DRIVE GEAR MOUNTING SUPPORT AND STUD ASSEMBLY, 31236
KNOB SHAFT DRIVE GEAR AND HUB, 31239
DISC AND PINION, 32096
"C" WASHER
.01" PLAY
ROLLER, 32086
LUBRICATE KNOB SHAFT BEARINGS WITH PETROLEUM JELLY
ELECTROLYTIC (A-C) 60 MFD., 32088 (50-60~) 180 MFD., 32435 (25~)
REMOVE SPRING WHEN MOTOR IS OPERATED IN VERTICAL POSITION
MOTOR, 32095 (50-60~) 32434 (25~)
USE LIGHT MACHINE OIL AT MOTOR BEARINGS
ROTOR IS PULLED FORWARD WHEN MOTOR IS ENERGIZED AND THE ROLLER ENGAGES THE DISC.
"C" WASHER
DAMPER, 32093 USED IN 50-60~ MOTORS ONLY)

*Friction Clutch Type Electric Tuning Motor.*

USED ORIGINAL ON
U-30, U-46, U-129, K-130


② COMMON CONNECTION TO ONE SIDE OF 24 V. POWER TRANSFORMER WINDING.
TO MUTING CIRCUIT
③ C.W.
④ C.C.W.
A.C ELECTROLYTIC 60 MFD. 50-60~ 180 MFD. 25~
TO SELECTOR DISC. ON REAR OF GANG CONDENSER SHAFT.
CAPACITOR
FRAME GROUNDING LUG
③ C.W.
② COMMON
④ C.C.W.
FLYWHEEL DAMPER 50-60~ ONLY
REAR VIEW OF MOTOR (LOOKING AT FLYWHEEL SIDE.)

*Friction Clutch Type Electric Tuning Motor*

## Revised Flywheel:

A revised design of flywheel has been employed on the mechanical clutch type drive motor of electric tuning models. This flywheel is available for replacement use, and is stocked as Part No. 31240. (This type is illustrated in service data for 11Q4, 11QK, 11QU.) It has two leather friction pads with adjustment provided for each. The use of two pads reduces the pressure required for ideal adjustment and thereby lessens wear and glazing to a point where stable operation and normal stopping of dial pointer continues indefinitely. These flywheels are also balanced so that each one passes a very stringent factory test; this being an influence in obtaining good adjustment as well as in keeping mechanical vibration to a minimum. When installing a flywheel, it is very important to have the leather friction pads thoroughly saturated with "Neatsfoot" oil; they should be soaked in this oil for at least 24 hours.

## Increased Torque:

Some motors in the mechanical clutch type electric tuning mechanism have a 60 mfd., 40 volt, Stock No. 32088 capacitor connected to the circuit as shown. This capacitor increases the torque of the motor and is primarily intended to increase rotor thrust for positive engagement of the arm and clutch. Should a motor which fails to "pull into" running position or which chatters in and out of engagement, be encountered in the field, the capacitor may be added as a remedy. It should be connected between the two top lugs of the motor (No. 3-No. 4) as shown, and the lead from the winding to No. 4 must be cut and secured clear of the circuit.

## Mechanical Motor Rumble:

Under certain conditions related to acoustics of room, placement of instrument, and general noise level, the mechanical noise of some mechanical clutch type electric tuning motors may be found objectionable. Should such a condition exist, it may be due to an unbalanced flywheel or noisy gear system. Check to see that intermediate gear Stock No. 31238 is the "micarta" type, and that the flywheel, Stock No. 31240, is correctly "balanced." The standard replacement units meet these requirements.

## Push Buttons Not Latching:

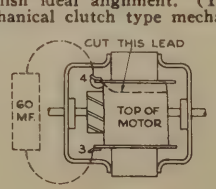
The position of the chassis in the cabinet with respect to the push buttons, is important in obtaining positive latching action. It may be necessary in some cases to elevate the front of the chassis slightly (approximately ¼-inch) by placing washers under its mounting feet, in order to obtain the best operation.

The strength of the spring used at one end of the latch bar to retain the switch lever in the "on" position has been increased in order to obtain a more positive latching action. The present spring is available as Stock No. 31970. Parts lists in service notes on models concerned should be accordingly changed.

## Mechanical Noise:

Noisy operation of the electric tuning mechanism, especially on larger instruments, may be reduced by application of the following suggestions:

(a) Thoroughly lubricate slide rods which carry dial pointer. Use an oil that does not tend to harden with age and also clings well to the guides.
(b) Lubricate the fork of AFC switch (where used) with similar oil.
(c) See that the dial drum is not rubbing against pilot light shields.
(d) Check alignment between motor shaft and pinion gear shaft, to see that these are adjusted on the same axis. It may be necessary to "shim" the motor mounting to accomplish ideal alignment. (This applies to mechanical clutch type mechanism.)




*Increased Torque for Mechanical Clutch Type Electric Tuning Motor.*

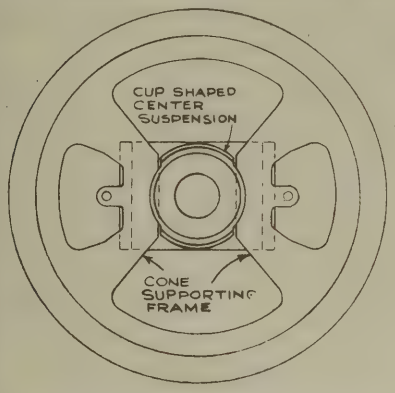
## REPLACEMENT CONES

### Installation Instructions:

Certain types of replacement loudspeaker cones are now being supplied with a cup-shaped center suspension fastened to the cone instead of the flat suspension and cup-shaped metal plate which were originally used.

These replacement cones can be used without modification on many types of speakers. However, on certain types, the speaker frame extends in so close to the center pole that it interferes with the cup-shaped center suspension; in such cases it is necessary to cut away two edge sections of the suspension, as follows:

1. Put cone in position in housing and mark




*The Cup-Shaped Suspension Must be Cut Away to Accommodate the Cone Supporting Frame in Some Speakers.*

places on suspension cup where edge of cup must be cut away.

2. Lift cone out of housing and cut away edge of cup where marked.
3. Cement cone into position in the usual way, being careful that the entire edge of the cup is securely cemented down, including the edge at the places that were cut away.
4. Leave the centering gauge in position until cement is thoroughly dry.

The accompanying sketch shows how the flat edge of the cup-shaped center suspension is cut away in two places to provide clearance for the cone supporting frame.

## REPLACING CONES

### In Speakers with Cemented Voice-Coil Support:

In some types of speakers, the fabric voice-coil support is cemented to the top-pole plate. This design provides more accurate and permanent centering, by eliminating possible strain and movement that may occur in tightening the screws on speakers that have adjustable-type voice-coil supports.

If the voice coil scrapes in the gap, it may be caused by:

(1) A bent speaker frame. This condition can usually be corrected by bending the frame in the required direction.

(2) A warped voice coil, or a warped voice coil support. This condition requires installation of a new cone, as follows:

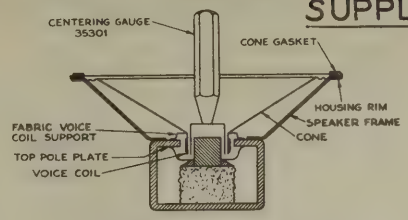
(a) Remove old cone by cutting around the cone rim and the voice coil support.

(b) See that the air gap is uniform and clean. Cover the gap with a piece of "scotch tape" to prevent entry of dirt and metallic particles.

(c) Remove all paper and cement from rim of cone housing and from the top-pole plate.

(d) Apply a ring of cement ("Duco Household") on top-pole plate and around rim of speaker frame.

(e) Carefully insert centering gauge (RCA Stock No. 35301) into the voice coil of the replacement cone, handle first, from winding end. Remove scotch tape




*In Speakers with Cemented Voice-Coil Support, the Voice-Coil must be centered while cementing the support.*

from the air gap and insert the cone into the speaker, with the voice coil leads in correct position with respect to the terminals. Press cone rim onto the housing rim.

(f) Apply cement on top outer edge of cone and lay the large cardboard cone gasket in place. Set the speaker in an inverted position on a smooth flat surface that has a ½ inch hole for the gauge handle to clear, until the cement is dry (about 15 minutes). See that the voice coil support is pressing against the cement on the top-pole plate.

(g) Work additional cement around the outer edge of the fabric voice-coil support, to insure positive grip all around between the support and the top-pole plate.

(h) Remove gauge from voice coil, using a rotary motion. Solder the voice coil leads in place, allowing sufficient slack to permit free motion of the cone. Dress the leads in the plane of motion, taking care that the leads do not strike against the cone, or cone housing. Cement dust cap on cone center.

## "KNOCKED-DOWN" VOICE COIL AND CONE

### Installation Instructions:

To simplify cone replacement in certain speakers, the cone and voice coil are supplied as two separate units: (1) The voice coil and support, (2) The cone diaphragm.

**General Procedure**

(a) Cement voice-coil support to the speaker, using centering gauge or speaker shims.

(b) Solder voice-coil leads.

(c) Put cone in place, cementing around rim of speaker frame.

(d) Cement junction of cone and voice coil.

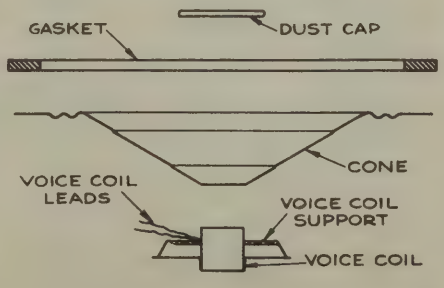
**Detailed Instructions**

(a) Remove old cone and voice coil. Protect air gap with scotch tape. Clean off all paper and cement.

(b) Apply a ring of cement (Duco Household) on top plate.

(c) Insert centering gauge in new voice coil, handle first, from the winding end.

(d) Remove scotch tape from gap. Insert voice coil and gauge in gap with leads in correct position for soldering. Press rim of voice coil support into the cement.




*Certain replacement cones are supplied "knocked-down" in two pieces—(1) The voice coil and centering support. (2) The cone diaphragm.*

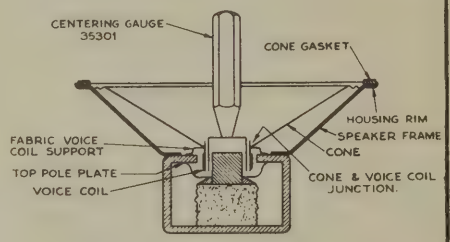
(e) Solder the voice coil leads to terminals, allowing sufficient slack to permit free motion of the cone. Dress leads in plane of motion, clear of cone and housing.

(f) Apply a ring of cement around the rim of speaker frame. Place cone down over voice coil and press cone rim tight to speaker frame.

(g) Allow cement to dry on cone rim and voice-coil support. Then run a ring of cement around the junction of the cone and voice coil, being careful the cement does not run inside voice coil.

(h) After cement at junction has dried, remove gauge, using a rotary motion.

(i) Cement large cardboard gasket in place. Set the speaker in inverted position on a flat surface until gasket is dry. Cement dust cap on cone center.




*When installing "knocked-down" speaker cone, the junction of the cone and the voice coil is cemented last.*

## REPLACING FIELD COIL

### In Speakers with Pressed Core:

Many RCA electrodynamic speakers have the field core pressed into the yoke. To replace the field coil in these speakers proceed as follows, BEING VERY CAREFUL NOT TO DAMAGE THE VOICE COIL OR CONE:

(a) Carefully remove the front dust cover by means of a razor blade or a sharp knife.

(b) Drive the core completely out of the yoke using a suitable piece of round steel rod a shown in Fig. 1.

(c) Replace the field coil. Be sure that all spacers, washers, hum coil, and other parts are replaced in their original positions.

(d) Insert the core down through the cone and field coil, and drive it in position as shown in Fig. 2.

(e) If core is not centered in voice coil it can be driven from side to side, as necessary, with a center punch.

(f) Cement a new dust cover in position on speaker cone.

(g) If desired a special tool for this purpose

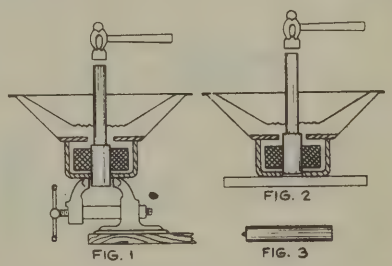



*Fig. 1—Removing Field Core.*
*Fig. 2—Replacing Field Core.*
*Fig. 3—Tool to Facilitate Removal and Replacement of Core.*

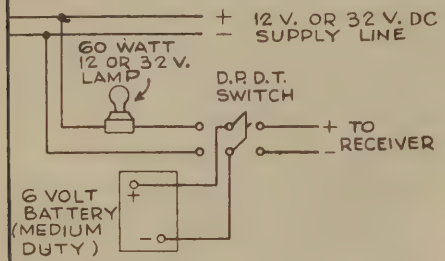
can be made locally with the end shaped as shown in Fig. 3. It should be made of drill rod or cold rolled steel and hardened.

(h) An alternative method of removing the core is to use a gear puller and press it out from the back of the yoke.

## RECHARGING 6V BATTERY

### On 12V or 32V DC Supply:

A 12-volt or 32-volt DC farm-lighting supply can be used to recharge a 6-volt radio storage battery. The recommended circuit is shown herewith. The charging rate may be increased or decreased by using a higher or lower wattage lamp.




*Radio storage battery can be charged on a DC farm-lighting outfit.*

## PUSH BUTTON SWITCHES

### Tarnished Contacts:

Proximity of rubber-covered wires may produce tarnish on the silver-plated push-button switch contacts. This condition may be remedied by wiping the contacts clean, and moving any adjacent rubber-covered wires or other rubber material away from the switch.

## ABSORPTION WAVE TRAP

### For Loop Receivers:

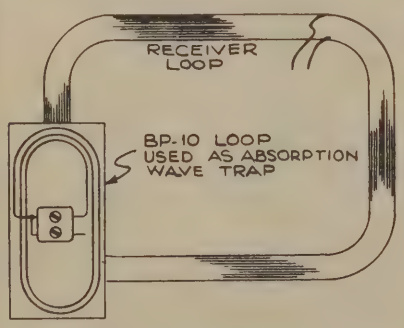
Interference and cross modulation due to the presence of a strong local broadcast station is seldom experienced on loop-type receivers because the signal pickup is much less on a loop than on an antenna.

However in rare cases where such interference is encountered, it can generally be eliminated by using an absorption-type wave trap, loosely coupled to the loop on the receiver, as shown in accompanying sketch, and tuned to the frequency of the interfering station.

A good absorption trap can be made with a small loop like that used in Model BP-10 "Personal" radio. Fasten a two-section mica trimmer (salvaged from a discarded IF transformer) on the small loop. Connect the trimmer across the terminals of the small loop. Use one trimmer, or both in parallel, depending on whether the interfering station is at the high or low end of the broadcast band.

Tune the receiver to the frequency of the interfering station, place the trap near the receiver loop, and adjust the trap trimmer(s) to resonance, indicated by a sharp dip in signal strength. Use smaller or larger capacity trimmers if required to reach resonance.

Check to see if the particular interference effects have been eliminated. Adjust the position of the trap to secure closer coupling if necessary to further increase signal absorption. Avoid over coupling. Fasten the trap in the desired position on the receiver loop.




*On a loop receiver, interference from a strong local broadcast station can be reduced by using an absorption loop, tuned to the interfering station, and loosely coupled to the receiver loop.*

## RCA VICTOR RECEIVERS

### Model Number Code:

The following abbreviations have been used by RCA for several years to classify models in general groups:

| | | | |
|---|---|---|---|
| BT | Battery Table | TT | Television Table Attachment |
| BP | Battery Portable | TRK | Television-Radio Console |
| CV | Converter | U, V | Radio-Victrola |
| K | Console | VA | Wireless Record Player |
| O | Portable Victrola | VHR | Home-Recording Radio Victrola |
| OSC | Oscillator | X | AC-DC Table |
| Q | Export Table | | |
| QK | Export Console | | |
| R | Record Player | | |
| RK | Record Kit | | |
| RR | Record Cabinet | | |
| T | AC Table | | |

## VOICE COIL IMPEDANCE

### And DC Resistance:

In servicing RCA radio loudspeakers, it is helpful to know that the DC resistance of the voice coil is approximately 10 percent less than the impedance at 400 cycles.

For example, a speaker with a rated voice-coil impedance of 2.2 ohms at 400 cycles will measure about 2 ohms DC resistance.

## RCA SCHEMATICS

### Switch Positions:

Practically all of the larger RCA receivers have decals on the cabinet (or other means) to indicate the function of each position on the more complicated switches. In cases where only the chassis is brought in for service, the corresponding information about controls is given in a knob drawing printed in the Service Note.

For example, the accompanying schematic shows the radio-phono-tone control switch circuit in Model V-135, drawn as usual in the extreme counter-clockwise position. The knob view shows the function of each position:

(1) "Off" (counter-clockwise).

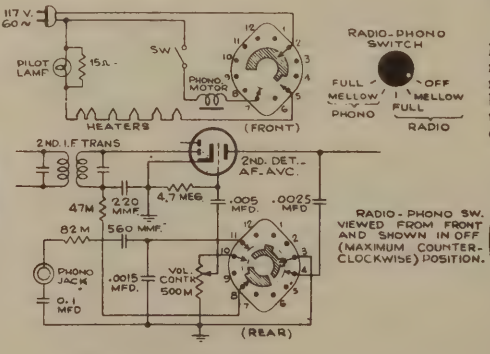
(2) Radio—mellow tone.

(3) Radio—full tone.

(4) Phono—mellow tone.

(5) Phono—full tone (clockwise).

As a general rule, on RCA receivers clockwise rotation of a control produces an increase. Thus on a range switch, the lowest-frequency band is counter-clockwise, and the highest-frequency band is clockwise. On tone controls, the narrowest audio range or deepest tone is counter-clockwise. The widest audio range or highest tone is clockwise.




*In RCA Service Note schematics, wafer switches are shown in extreme counter-clockwise position, and the drawing of control knobs gives sequence and function of switch positions.*

## 1941 RECEIVERS

### Reduction in Sensitivity:

It may be found necessary in certain localities to reduce the sensitivity of these receivers in order to reduce the effect of noise pickup in between stations. This can be done by adding larger resistors in the i-f cathode connected between the existing 100 ohms and ground with a 1/10 mfd. in shunt with the added resistor. On the receivers which do not use a 100 ohm resistor in the i-f cathode, the resistor and capacity combination should be added between the cathode and ground. The value of the resistor could be anything between 500 and 3,000 ohms depending upon the reduction in sensitivity required.

## ORDERING OF SERVICE PARTS

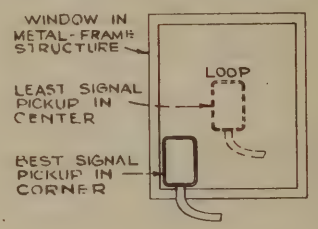
### Proper Identification:

During the production of certain models, it is sometimes found expedient to make a few changes for the sake of ease of assembly, etc. Chassis carrying these changes are identified from preceding ones of the same model by a letter following the RC number. The changes are seldom of sufficient scope to warrant the publication of a separate Service Note. Consequently, when ordering, speed and accuracy in filling orders may be assured by checking the RC stamping on the chassis rear apron with the designation as shown on the title page of the Service Note. If these designations do not agree, parts should be ordered by specifying the RC Number, as stamped on the particular chassis.

## BEST LOOP PICKUP

### In Corner of Window:

In a metal-framed structure, such as a car, train, plane, or steel building, best signal pickup is usually obtained by placing the loop in one corner of the window instead of in the center. The center of the glass space is usually a null for signal. This fact should be kept in mind when using the extension loop on a portable radio, as there is a natural tendency to fasten the loop in the center of the window.

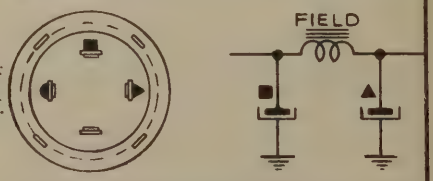



*For best signal pickup, the extension loop on a portable set should be placed in corner of window.*

## ELECTROLYTIC CAPACITORS

### Terminal Identification:

On certain types of multiple-section electrolytics, the terminals are identified by small markings (triangle, half-round, or square). The marks are either cut-outs or mouldings in the base. Corresponding marks are shown adjacent to the electrolytic symbols in the schematic diagrams.

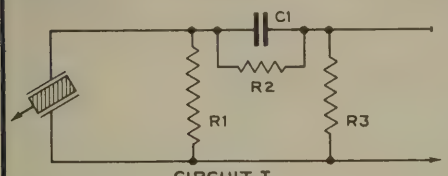



*In some electrolytic capacitors, the terminals are identified by half-round, triangular, and square markings. Corresponding marks are shown adjacent to the symbols in the schematic.*

## TONE COMPENSATION

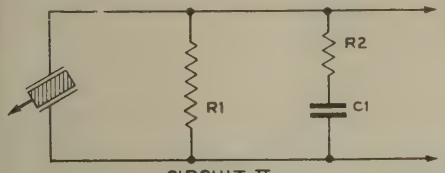
### For Pickup Circuits:

Because of the widely varying frequency characteristics of various types of audio amplifiers with which crystal pickups may be used it may be desirable in some cases to make refinements in the pickup circuit to compensate for the characteristics of the amplifier. The following circuits show examples of compensation adjustments:



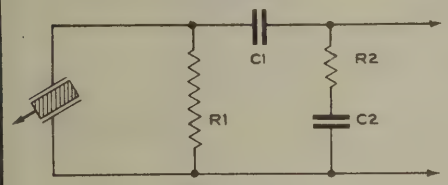
CIRCUIT I

Circuit I:
Increasing R1 increases low frequency response.
Increasing C1 increases high frequency response.
Increasing value of R3 with respect to total value of R2 plus R3 increases the output.



CIRCUIT II

Circuit II:
Increasing R1 increases low frequency response.
Increasing R2 increases high frequency response.
Decreasing C1 increases output.



CIRCUIT III

Circuit III:
Increasing R1 increases low frequency response.
Increasing R2 increases high frequency response.
Increasing value of C1 with respect to total value of C1 plus C2 increases the output.

## REPLACEMENT OF RUBBER TIRES

### On Turntable Drive Discs:

Stock No. 37872 Rubber Drive Tire For RP-145, U-9, U-10, U-12—List Price, 75c.
Stock No. 37873 Rubber Drive Tire For RP-152 (V200, V205, etc.)—List Price, 75c.

1. Remove old tire by stretching and pulling over drive disc edge.
2. Thoroughly clean drive disc to remove burrs or foreign particles.
3. Place new tire over the drive disc. Avoid any twisting or excessive stretching of the tire.
4. Roll disc and tire on a flat clean surface while simultaneously applying a slight downward pressure on the disc shaft. This will allow the tire to seat itself properly in the "V" shaped groove on the drive disc and take up for any uneven stretching of the rubber tire.
5. Clean rubber tire with carbon tetrochloride (Carbona).

## PHONOGRAPH MOTORS

### Identifying Colors:

In order to facilitate identification in respect to frequency, Phonograph motors are marked either on the bottom or side with a large spot of paint as follows:

| | |
|---|---|
| 60 cycles | no mark |
| 50 cycles | green |
| 25 cycles | white |

## GAIN DATA

### Using 3-volt Fixed Bias:

To provide more definite operating conditions, the R-F and I-F gain data for RCA Victor Service Notes is now obtained with a fixed 3-volt bias on the A.V.C. bus.

**To duplicate this gain data, it is necessary to connect a 3-volt bias battery temporarily to the set as indicated in the service notes.** The negative side of the 3-volt battery should be connected to the A.V.C. bus, and the positive side of the battery should be connected to the chassis. (In a.c.-d.c. receivers, the positive side of the battery should be connected to the common negative wiring.)

The battery may consist of two small flashlight cells connected in series.

Use of the fixed bias eliminates necessity for shorting out the A.V.C. circuit, and minimizes difficulty due to over-loading with resultant grid current.

## STAGE-BY-STAGE ALIGNMENT

### To Reduce I-F Regeneration:

RCA Service Notes generally specify "stage-by-stage" I-F alignment. This procedure must be followed (when using an output meter) in order to prevent I-F regeneration or oscillation. The procedure is as follows:

(a) Connect the signal generator through .01 mfd. to the grid of the I-F tube. Adjust the primary and the secondary of the 2nd I-F transformer for maximum peak output.

(b) Connect the signal generator through .01 mfd. to the grid of the 1st detector tube. Adjust the primary and secondary of the 1st I-F transformer for maximum peak output.

(c) **DO NOT re-adjust the 2nd I-F transformer.**

When using a cathode-ray oscilloscope for alignment, the I-F trimmers should be adjusted for coincidence rather than peak output. Regeneration shows up as tapering peaks at the bottom of one side of the resonance curve.

## ALIGNMENT AT 1,720 K.C.

On models that cover the frequency range of 540 to 1,720 k.c., the Service Data specifies a definite alignment procedure to obtain (1) Frequency coverage up to 1,720 k.c., (2) Maximum sensitivity at 1,500 k.c. This procedure is as follows:

(a) Feed a 1,720 k.c. signal into the receiver. Turn the gang condenser to minimum capacity (rotor all out). Adjust the oscillator shunt trimmer in the receiver for peak output on the 1,720 k.c. signal.

(b) Feed a 1,500 k.c. signal into the receiver, and tune the receiver to pick up the signal, even though it may not come in at exactly 1,500 k.c. on the dial. Then adjust the antenna circuit trimmer for maximum output.

## "POPPING" INTERFERENCE

### Reduction of Static Discharges, AC-DC Receivers:

Where AC/DC receivers are used with an external antenna which is exposed to steam, smoke, snow, or other influences of similar nature, a static accumulation may occur on the antenna and will produce objectionable interference by discharge to ground, chassis or other nearby objects. This condition can be obviated by connecting a 1 megohm resistor in parallel with the isolating capacitor which is normally used in series with the antenna input, thus maintaining the antenna at ground d-c potential at all times.

## MOLDED MICA CAPACITORS

### Tolerance and Identification:

All replacement molded mica toothpick capacitors are built to the minimum tolerance specification, so that only one unit of each particular value must be stocked; this unit being usable in all applications irrespective of the tolerance requirement. Some capacitors removed from instruments will therefore have numerical markings that do not correspond to those of the replacement supplied. Molded mica capacitors now being used have markings that correspond to their capacitance value in micromicrofarads. Example: 270 indicates 270 mmfd.

## EXTERNAL ANTENNA COUPLER

### For Loop Receivers:

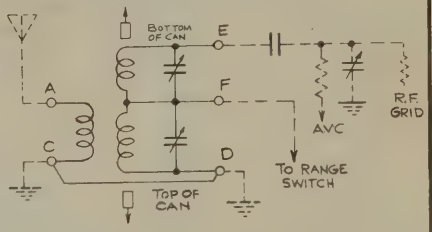
A specially designed antenna coupler, Stock No. 9912 is available for use in connecting an external antenna to a loop receiver. This coupler will prove valuable for installations where it is desirable to eliminate the loop in order to improve the signal noise ratio and increase sensitivity.

The antenna coupler may also be used as a fixed-tuned substitute for any standard loop antenna to aid in aligning loop receivers in a shop.

The coupler covers "A" and "B" bands, approximately 550 to 1,750 kc, and 1,750 to 5,000 kc. It has low-frequency and high-frequency adjustments on each band to ensure adaptability and good performance on practically any loop receiver.

The circuit is shown in the accompanying diagram. Installation and adjustment instructions are furnished with the unit.

List Price of No. 9912 is $2.25.



*Circuit of External Antenna Coupler Stock No. 9912*

## HUM REDUCTION

### On AC-DC Models with PM Speaker:

In RCA AC-DC receivers that use a PM (permanent-magnet) speaker, effective hum bucking is obtained through the use of an output transformer with tapped primary. The tap is established at a point where the "ampere turns" of ripple in the direction of the output plate balances the "ampere turns" of ripple in the direction of the screen and other plate circuits.

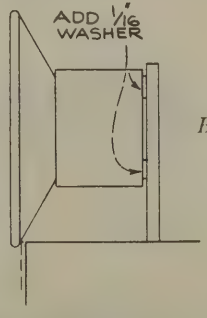
High residual hum (at zero volume setting) may be due to incorrect balance, and can usually be remedied by one of the following steps:

(a) Output tube with off-standard characteristics.
(b) Filter capacitor too low capacity, or too high internal resistance.
(c) "B" filter resistor not correct value. Measure resistance and change if necessary.
(d) Cathode bias resistor of output tube not correct value.
(e) If hum persists change the output-tube-plate bypass to rectifier cathode instead of to output-tube cathode.
(f) If none of preceeding steps reduces the hum to a satisfactory level, replace the output transformer.

## LITTLE NIPPER

### Speaker Adjustment:

Certain cases of "off center" cones have been attributed to a binding between the speaker housing and chassis base as illustrated. This should be checked wherever rattle is experienced, and washers added as indicated, if required.



*If Speaker Frame Binds Against Front of Chassis, Install Spacer Washers as Shown*

# COLOR CODING OF OUTPUT TRANSFORMERS

In some production, the color code of leads on the following transformers is changed. When installing, check the drawing number stamped on the transformer and refer below for color code.

## ORIGINAL COLORS

| Stock No. | 35774 | 37350 | 35056 | 33444 | 37899 | 14534 | 36098 |
|---|---|---|---|---|---|---|---|
| Dwg. No. | 94106-1 | 89681-3 | 89681-2 | 83517-3 | 94193-1 | 83517-1 | 94117-1 |
| Pri. Start | Red | Red | Red | Red | Red | Red | Red |
| Pri. Tap | Black | ——— | ——— | Red-Black | Red-Black | Red-Black | ——— |
| Pri. Finish | Blue | Blue | Blue | Red | Black-Red Tr. | Red | Red |
| Sec. Start | Bus | Green-Red Tr. | Black | Black | Yellow | Black | Bus |
| Sec. Finish | Bus | Brown | Black | Black | Black | Black | Bus |

## ALTERNATE COLORS

| Stock No. | 35774 | 38994* | 35056 | 33444 | 37899** | 36098 |
|---|---|---|---|---|---|---|
| Dwg. No. | 94106-2 | 97610-2 | 97610-1 | 97604-2 | 97604-1 | 97611-1 |
| Pri. Start | Blue | Blue | Blue | Brown | Brown | Blue |
| Pri. Tap | Red | ——— | ——— | Red | Red | ——— |
| Pri. Finish | Red-Black | Red | Red | Blue | Blue | Red |
| Sec. Start | Bus | Black | Black | Bus | Black | Black |
| Sec. Finish | Bus | Green-Red Tr. | Green-Red Tr. | Bus | Green-Red Tr. | Black |

* Stock No. 38994 supersedes No. 37350.
** Stock No. 37899 supersedes No. 14534.

## COLOR CODE

### For Power Transformers:

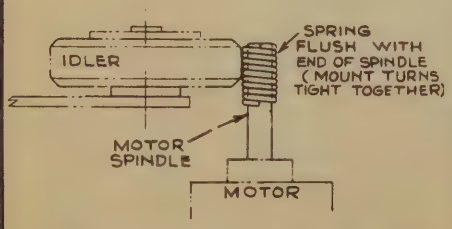
Changes have recently been made in the color code of RCA power transformer leads to conform to R.M.A. standards.

| | Old Color Code | New Color Code |
|---|---|---|
| Rectifier filament | yellow | yellow |
| Amplifier filament | blue | brown |
| Hi-voltage secondary | brown | red |
| Hi-voltage center tap | brown & black | red & yellow |

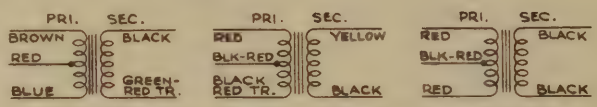
There are three different types of primaries as follows:

| | | |
|---|---|---|
| Single 110-volt primary | red | black |
| **Double primary—110-220 volts:** | | |
| No. 1 Primary—Start | red | black |
| No. 1 Primary—Finish | red & black | black & yel. |
| No. 2 Primary—Start | red & yel. | black & green |
| No. 2 Primary—Finish | black & red tr. | black & red |
| **Tapped primary—110-125-150-210-240 V.:** | | |
| Start | red | black |
| 110 volt tap | red & black | black & yel. |
| Finish | black & red tr. | black & red |

These transformers are interchangeable since no change has been made in their electrical characteristics. Transformers supplied for replacement purposes using the new color code leads are shipped less end shields (covers). The end shield from the original transformer should be used. If the lower shield is of the bent lug type, it need not be removed from the chassis.




*Spring sleeve installed on 60-cycle motor spindle for operation on 50-cycle supply.*




*Original and Alternate Colors on Transformer Stock No. 37899, and Colors on No. 14534, which is Superseded by No. 37899.*

## 60 TO 50 CYCLE CONVERSION

### For Rim-Drive Phono Motors:

(These instructions supersede all past issues, covering the use of shrunk sleeves.)

A spring sleeve is used to increase the diameter of the motor drive spindle, to compensate for the slower speed of the motor when used on a 50 cycle line.

Spring sleeves are available for the following models which comprise most of the motors using spindle drive manufactured to date.

To apply the spring-sleeve to the motor spindle, lock the rotor manually and press spring gently over end of spindle, twisting the free end of spring counter-clockwise (to unwind coil) until following end of spring is flush with end of spindle.

The ends of spring should not protrude, and all coils should be close together, allowing a flat even surface on the motor spindle to contact the rubber drive.

| | MOTOR | | | Spring-Sleeve |
|---|---|---|---|---|
| Model No. | Dwg. No. | Stock No. | RP No. | Stock No. |
| V-100 | 91647-3 | 36404 | | 39681 |
| V-101 | " | " | | " |
| V-102 | " | " | | " |
| V-105 | " | " | | " |
| QU56-C | 92127-1 | 36984 | | " |
| QU56-M | " | " | | " |
| V-135 | 91647-5 | 39301 | RP-162 | 39750 |
| V-140 | " | " | " | " |
| V-175 | 91706-1 | 38612 | RP-158 | 39748 |
| V-209 | " | " | " | " |
| V-210 | " | " | " | " |
| QU51-M | " | " | RP-152R | " |
| QU52-C | " | " | RP-152S | " |
| QU52-M | " | " | RP-152R | " |
| QU55 | " | " | RP-152R | " |
| V-215 | 91655-1 | 36254 | RP-160 | 39749 |
| V-219 | or 91655-6 | 36254 | RP-160A | " |
| V-221 | " | " | RP-160B | " |
| V-225 | 91845-1 | 38557 | RP-151 | " |
| QU-51C | 91655-6 | 36254 | RP-145E | " |
| QU5 | 91655-6 | 34364 | RP-145E | " |

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